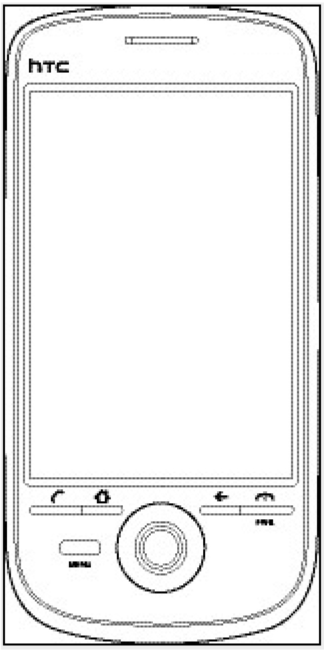
Sapphire

Service Manual



HTC Proprietary

Confidential Treatment Requested

Rev. AX02

HTC Corporation.

Engineering Mobility

REVISION CONTROL TABLE

REV	DATE	CONTENTS	DEPT	REVISED	STAGE
AX01	2008/12/29	Fist Draft	PSE	Marc	DVT
AX02	2009/01/14	Add product picture at page 1	PSE	Marc	CVT

1 Introduction

- This manual provides the technical information to support the service activities of this product.
- This document contains highly confidential information, so any or all of this document should not be revealed to any third party.
  - Chapter 1: Introduction-This Chapter is about Products features and basic Product function. After reading this chapter, you will know what feature the product has and basic hardware operation. Also you will know how to perform soft-rest and hard-rest in this chapter.
  - Chapter 2: Device Disassembling and Assembling Procedure- After reading this chapter, you will learn how to disassemble and assemble the product. Also, you will know what tools to use and the torque. Please follow the instruction to disassemble the unit to prevent from damaging the unit.
  - Chapter 3: ROM Re-flash Procedure- After reading this chapter, you will learn how to perform the ROM image re-flesh by using RUU and SD-Card. Also you can find the steps of enter the boot loader mode.
  - Chapter 4: DIAGNOSTIC PROGRAM- After reading this chapter, you will learn
    - How to use the diagnostic program to perform unit function test
    - How to test some functions in Windows Mobile mode (ex. WLAN, Bluetooth, and USB etc…)
  - Chapter 5: Power measurement test- After reading this chapter, you will learn how to use MB leakage test procedure and battery run-down test (Battery Capacity Measurement).
  - Chapter 6: Cosmetic Inspection Criteria- After reading this chapter you will learn the appearance quality inspection criteria, ex. Display, bezel, and housing etc…
  - Chapter 7: Generic Troubleshooting- After reading this chapter, you will learn how to do generic trouble-shooting.
  - Chapter 8: Generic Labeling Plan- In this chapter, you will find generic labels for reference, ex. Regulation label, and battery label etc…
  - Chapter 9: Generic Spare Part List and Photos- In this chapter, you will find Spar parts reference list and photos for repairing, including unit and Board level.
  - Chapter 10: RF Antenna Specification- Reference Spec for RF test.

1.1 Product Features

Features

Target
- Schedule: Dec, 2008

Platform
- Slim bar type Internet touch phone
- Android platform

Dimension
- 113 x 55 x 13.65 mm [TBD]

Processor/Chipset
- Qualcomm MSM 7201a, 528 MHz

Memory
- Flash: 256 MB
- RAM: 192 MB DDR (include 64MB baseband chip)

LCD Module
- 3.2-inch 320x480 HVGA resolution
- 262K color TFT LCD with LED back light (OS support 65K color)
- Capacitive touch screen

HSUPA/HSDPA/UMTS/EDGE/GPRS/GSM Function
- Internal antenna
- HSDPA/UMTS dual-band (900/2100 MHz) and GSM/GPRS/EDGE Quad-band (850/900/1800/1900 MHz)
  - ♦ HSDPA/UMTS
    - ✓ 900: 880-915, 925-960 MHz
    - ✓ 2100:1920-1980, 2110-2170 MHz
  - ♦ GSM/GPRS/EDGE
    - ✓ 850: 829-849, 869-894MHz
    - ✓ 900: 880-915, 925-960 MHz
    - ✓ 1800: 1710-1785, 1805-1880 MHz
    - ✓ 1900: 1850-1910, 1930-1990 MHz
- HSDPA
  - ♦ 3GPP release 5 compliant
  - ♦ UE category 8, up to 7.2 Mbps downlink
- HSUPA
  - ♦ 3GPP release 6 compliant
  - ♦ UE category 5, up to 2 Mbps uplink
- Global roaming
- Auto band switching
- Handover and cell selection between GSM/GPRS/ EDGE and UMTS
- DTM
- SAIC (circuit switch only)
- Equalizer (HSDPA channels only)
- Audio codec: AMR-NB,EFR, FR, HR
- SMS (MO, MT), concatenated SMS (640 characters)
- Support MCC-MNC-UC-ID, as stated in 3GPP TS 25.401 R99, Section 6, for both RIL and radio
- Generic Services:
  - ♦ Call holding/waiting/forwarding
  - ♦ Call barring
  - ♦ CLI (Calling Line Identity)
  - ♦ Display own number
  - ♦ Network selection
  - ♦ Cell broadcast
  - ♦ Multi-party conference call
  - ♦ Spool icon
  - ♦ Phase 2+ unstructured supplementary service data
  - ♦ Network Lock
  - ♦ USSD
  - ♦ CPHS
- EGPRS functionality
  - ♦ EGPRS class B
  - ♦ Multi-slot standard class 12
  - ♦ PBCCH
  - ♦ Link Adaptation and Incremental Redundancy
- USIM/SIM
  - ♦ 1.8/3V of UICC
  - ♦ USIM Application at least according to 3GPP TS 31.102
  - ♦ SIM Application Toolkit release 99
  - ♦ Over the Air (OTA) programming
  - ♦ FDN
  - ♦ ADN/SDN
  - ♦ Security Pin 1 & 2 control

Standalone GPS
- Internal GPS antenna
- Sensitivity -145 dBm for cold start and -155 dBm for tracking
- Support NMEA 0183 version 3.0 or above
- Dynamically allocate parallel channel GPS receiver
- Acquisition time
  - ♦ Hot start: 8 seconds, typical TTFF (open sky & static condition)
  - ♦ Warm start: 60 seconds, typical TTFF (open sky & static condition)
  - ♦ Cold start: 75 seconds, typical TTFF (open sky & static condition)
- Update rate: once/1sec (default)
- GPS Accuracy
  - ♦ Position: < 15 meters, 95% typical
  - ♦ Velocity: 0.05 meter/sec steady state

AGPS
- Support UE-Based & UE-Assisted AGPS
- OMA SUPL v1.0 compliance (v2.0 if available)
  - ♦ SUPL-RRLP
  - ♦ SUPL-RRC (optional) (TBD)
  - ♦ WAP push initiated SUPL
- Standard 3GPP AGPS compliance
  - ♦ 3GPP TS 44.031 (RRLP 5.12)
  - ♦ 3GPP TS 25.305 (GSM & UMTS)
- Performance requirement
  - ♦ TTFF (95% successful rate): < 20 seconds
  - ♦ 2D Location Error (95% successful rate): < 100 m
  - ♦ Sensitivity requirement
    - ✓ GPS for one satellite: up to -142dBm
    - ✓ GPS for remaining satellite: up to -147dBm

- 3GPP TS 25.171 compliance (Requirement for support of Assisted Global Positioning System)
- 3GPP 34.171 (Terminal conformance specification, Assisted Global Positioning System)
- 3GPP TS 34.108 (Common test environments for User Equipment conformance testing)

Digital Compass
- Compass resolution: ± 1 degree (displays degrees and cardinal points)
- 2D/3D (2/3 channel) sensor
- Within ± 5 degrees accuracy
- ± 2000 μT Magnetic flux measuring range
- Support auto map orientation alignment

Motion G-sensor
- Tri-Axis Accelerometer
- Resolution: 22 milli-g
- Auto portrait / landscape mode change for video and photo viewer

Digital Camera
- 3.2 mega-pixel camera with auto focus

Key/Button
- On device side
  - Volume up/down button
- On device front
  - Trackball
    - ✓ 360-degree navigation control including action
  - Send
  - End (Long Press be Power Button)
  - 3 application keys
    - ✓ Home
    - ✓ Back
    - ✓ Menu

Notification
- One tri-color LED for power, network, and notification
- Notification by sound, vibration, or status shown on the display

Audio
- Built-in microphone
- Receiver
- Loud speaker for hands-free supported
- Full duplex
- Audio sampling rate
  - Recording (uplink): 8-bits or 16-bits with 8KHz, 11KHz, 22KHz, 44KHz
  - Playback (downlink): 16-bits with 44KHz
- AMR-NB//AAC/AAC+/WAV/ WMA/MP3 codec
- Audio path routing for phone and VoWLAN
  - Bluetooth
  - Receiver
  - Speaker
  - Headset

Connectivity & Interface
- Bluetooth
  - Compliant with v2.0 with EDR
  - Class 2 transmit power
  - Supported profiles:
    - ✓ GAP (generic access profile)
    - ✓ RFCOMM (Serial Port Emulation)
    - ✓ HSP (Headset Profile)
    - ✓ HFP (Hands-Free Profile)
  - Co-exist with Wi-Fi
- Wi-Fi
  - IEEE 802.11b/g compliant
  - Internal WLAN antenna
  - Data rate auto fallback for extended range
  - ELP mode
  - Security
    - ✓ WEP
    - ✓ WPA, WPA2 (802.11i)
    - ✓ TKIP
    - ✓ Authentication
- HTC ExtUSB™ 11-pin mini-USB
  - USB 2.0 Client with High Speed
  - Audio Jack
  - Mass Storage Device Class
  - Android Debug Bridge (ADB)
- 1.8/3V USIM/SIM card slot
- microSD card slot
- RF connector for testing

Power
- Battery
  - Removable and rechargeable battery, 1,340 mAh
- Battery life
  - Playing video: 8 hours (Base on NSTL test condition) [TBD]
  - Playing music: 12 hours (Base on NSTL test condition) [TBD]
  - GSM talk time: 205 ~ 445 minutes (Base on RF power level 5~12) [TBD]
  - GSM standby time: 230 ~ 430 hours (Base on multiframe 2~5) [TBD]
  - WCDMA talk time: 135 ~ 380 minutes (Base on RF output power 0~23 dBm) [TBD]
  - WCDMA standby time: 325 ~ 630 hours (Base on DRX64~512) [TBD]
  - VoWLAN talk time: 180 minutes 180 minutes [TBD]
  - VoWLAN standby time: 120 hours 120 hours [TBD]
- AC adaptor
  - AC input: 100 ~ 240V AC, 50/60 Hz
  - The device shall be able to detect the AC adapter complied with China adapter standard.
- DC output: 5V and 1A

Liquid Indicator

Lanyard / Strap Hole

Accessories
- Quick Start Guide [Inbox]
- CD (User manual & Sync. software) [Inbox]
- Screen Protector [Inbox]

- Travel Charger [Inbox]
- Pouch (Carrying Case) [Inbox]
- USB Sync Cable (mini-USB/USB) [Inbox]
- Battery with battery cover [Inbox]
- Wired Stereo Headset [Inbox]
- Mono Bluetooth Headset, BH M200
- Bluetooth Keyboard
- Car Charger
- Car Holder

Compatibility Test

Below 3rd party accessories are required to do the compatibility test for all models.

- Mono Bluetooth Headset, BH M100
- Handsfree Carkit : Parrot CK3400LS, Parrot MK6100, Parrot Minikit, Audi, BMW & Mercedes in car solutions
- Bluetooth Conference: Parrot Conference
- Bluetooth Speaker: Parrot Boombox
- SanDisk memory cards (including SDHC format)

Android Applications

Applications under OHD distribution model

- Home Screen, Application Launcher, Lock Screen, and Track View for notification, Settings
- Dialer
- Browser
- Camera
- Pictures
- Music
- Media Player (and streaming media supported)
- SMS/MMS
- IMPS (MSN(*)/Yahoo IM)
- Contacts
- Calendar
- Alarm Clock
- Calculator
- SIM Toolkit

Applications under GMS licensing model

- Search
- Google Maps with Street View
- YouTube
- Gmail
- IM (GTalk, AIM) (*)
- Synchronization (Google Contacts, Calendar, Gmail)
- Market (*)
- Modules, Codec under OHD distribution model
- Bluetooth profiles
  - ♦ GAP, RFCOMM, HFP, HSP
- Audio Codec
  - ♦ MP3, MIDI, AAC-LC, AAC+, AMR-NB, WMA
- Video Codec
  - ♦ MPEG4 SP, H.263, H.264, WMV
- Image File Format
  - ♦ PNG, JPG
- OMA DRM 1.0 (Forward Lock only)
- Multiple APN

Enhancements

Android Application Enhancements

- Smart Dialer
- Input Method, support Traditional and Simple Chinese handwriting recognition
- Camera
- Multiple modes support – Camera, Photo ID

HTC Value-Added Applications [Generic]

- POP3/IMAP4 Mail Client
- WAP Browser
- J2ME Support
  - ♦ JSR 75 PIM access & FC
  - ♦ JSR 118 Mobile Information Device
  - ♦ JSR 120 Wireless Messaging API
  - ♦ JSR 135 Mobile Media API
  - ♦ JSR 139 Connected Limited Device Config
  - ♦ JSR 185 JTWI

Customer Specific Applications

-

Regulatory

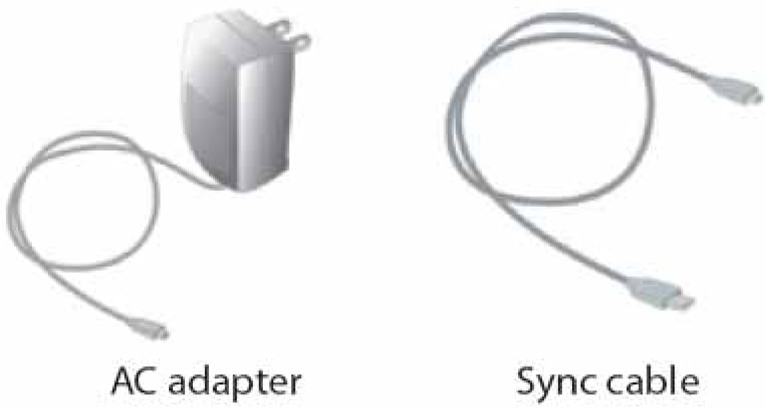
- USB Certification
- BQB Certification
- Wi-Fi Certification
- CB Certificate/report [International]
- GCF Certification [European Union]
- R&TTE: EMC / EMI, Safety SAR [European Union]
- FCC approval

Note: (*) Not ready, dependent on Google.

Product overview

- **Front side**

- **Accessories**



#	ITEM	FUNCTION
1	AC ADAPTER	RECHARGES THE BATTERY.
2	USB SYNC CABLE	CONNECTS TO A PC AND SYNCHRONISES DATA.

- **Install the SIM card**

1. Make sure your device is turned off.
2. Press the back cover latch down and gently slide the back cover towards yourself. Once the back cover pops out, remove it by lifting it up from the bottom end.
3. If you have installed the battery, remove it by lifting it up from the bottom end.
4. Insert the SIM card into the slot with its gold contacts facing down and its cut-off corner facing toward outside of the slot.
5. Install the battery by inserting it with its exposed copper part aligned with the protruding copper conductor on the upper right side of the battery compartment. Insert the upper part of the battery first, then gently push the battery into place.
6. Replace the back cover by gently sliding back in until it snaps in place.

- **Install the SD card**

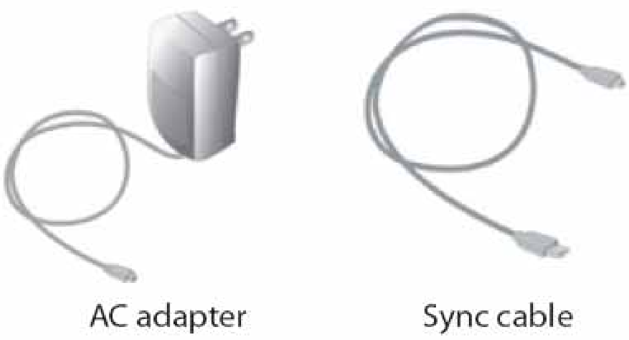
If you need more storage for your device, you can install an SD card into the slot on the upper part of the device. To install the SD card, gently insert the card into the slot (with its gold contacts facing down) until it snaps in place.

To remove the SD card, make sure that no application is accessing the card. Press the card to pop it out slightly and gently pull the card out of the slot.

- **Charge the battery**

New batteries are shipped partially charged. Before you start using your device, you have to install and charge the battery. Some batteries perform best after several full charge/discharge cycles. You can charge the battery in two ways:

- Connect your device directly to an electrical outlet using the AC adapter.
- Plug the sync cable to the USB port on your PC and to the sync connector on your device.



When your device is turned off, charging is indicated by a solid amber light on the LED indicator.
When your device is turned on, charging is indicated by a solid amber light on the LED indicator as well as a charging icon () on the Today screen.
After the battery has been fully charged, the LED indicator becomes green and a full battery icon
() appears on the Today screen.

- **To perform a soft reset**

- Use the stylus to press the RESET button found on the back of the device. Your device restarts and displays the Today screen.

- **To perform a hard reset**

Warning! Your device will be set back to factory default settings. Please ensure any additional installed programs and/or user data have been backed up before a hard reset is performed.

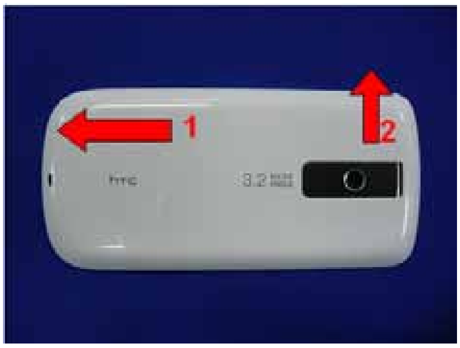
1. Hold the **Soft1** and **Soft2 Key** and Press the **RESET Button** at the same time
2. Press **SEND** Button to confirm hardware reset
3. Press **OK Button** to double confirm hardware reset

2 Device Disassembling and Assembling Procedure

2.1 Disassembling procedure



1. PHILLIPS SCREW-DRIVER 00X50
2. FLAT PLASTIC STICK
   (P/N:RTT-00006)
3. CLEANING CLOTH
4. PLASTIC TWEEZERS
5. ESD WRIST STRAP.





1. Remove the battery cover





2. Remove the battery





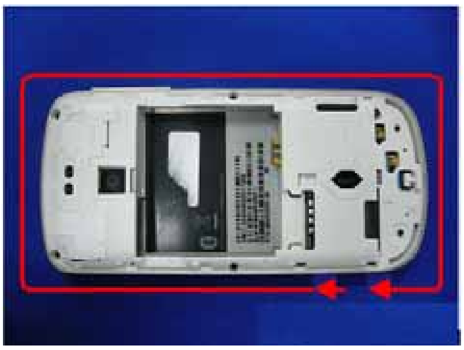


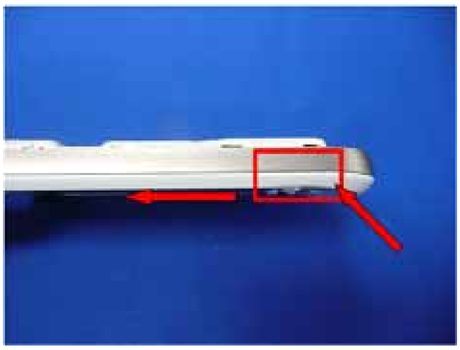
3. Unfasten the screws at the location indicated.



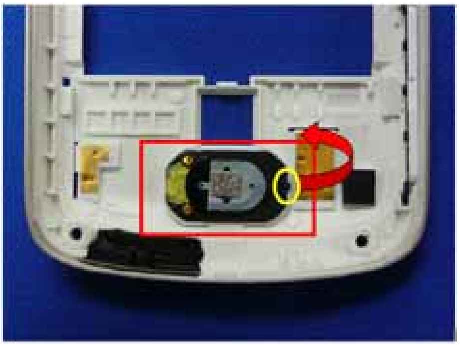
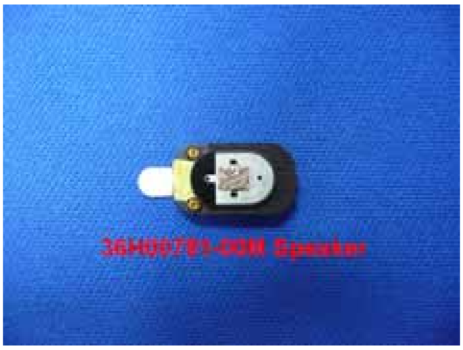
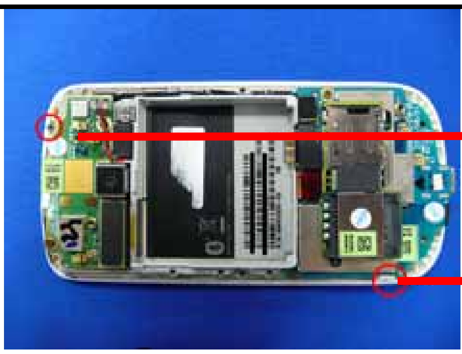
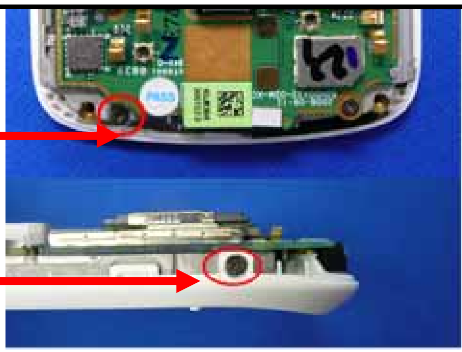


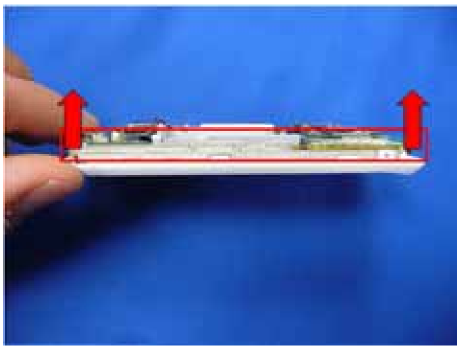
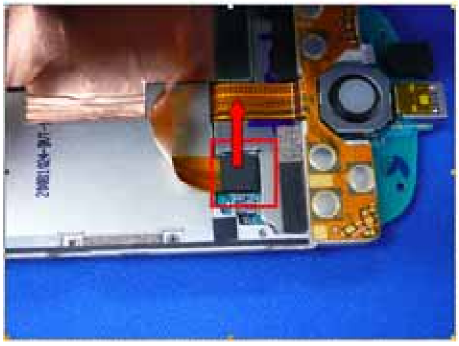
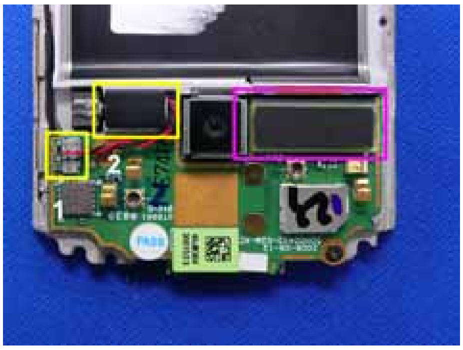
4. Remove the antenna by inserting the plastic stick in to the gap

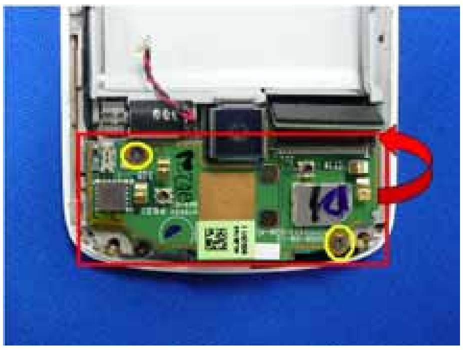




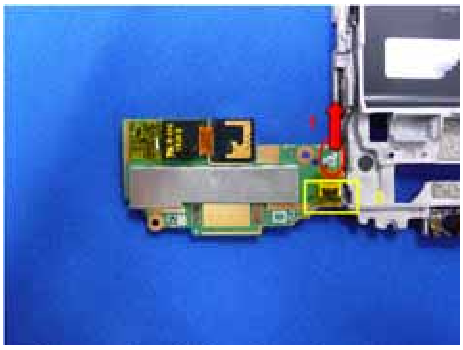
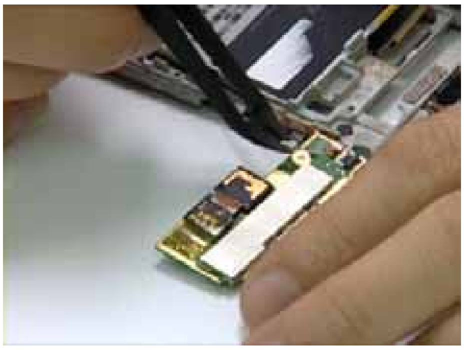
5. Use the flat plastic stick to slide through the gap between keyboard upper cover and keyboard bottom cover.

	
 	6. Disassemble speaker from keyboard bottom cover.
 	7. Unfasten the screws at the location indicated

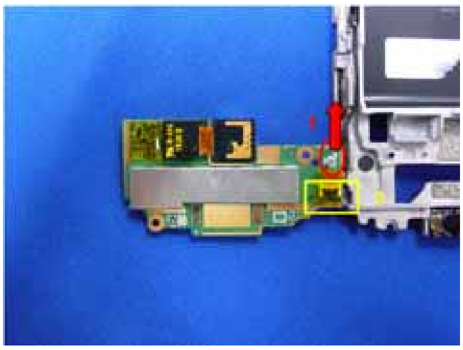
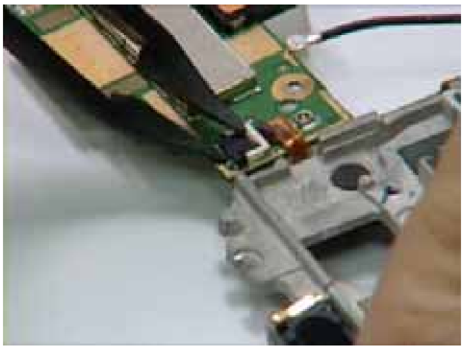
 	8. Disassemble LCM FPC connector from the Main board.
 	9. Disconnect the Vibrator cable
	10. Disconnect the FPC connector from the Upper board.




11. Unfasten the screws at the location indicated
12. Turn over the upper board.

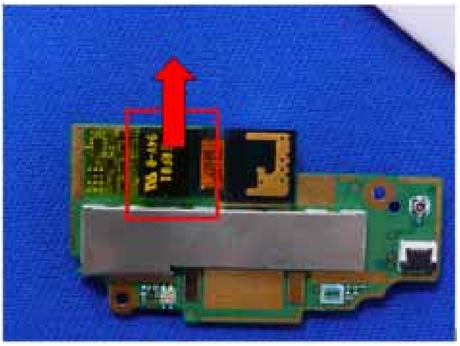
13. Disassemble the cable.

14. Disconnect the volume FPC from Rigid-Flex board.



15. Remove the volume FPC from the chassis



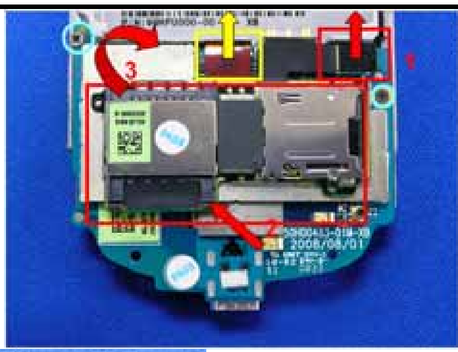


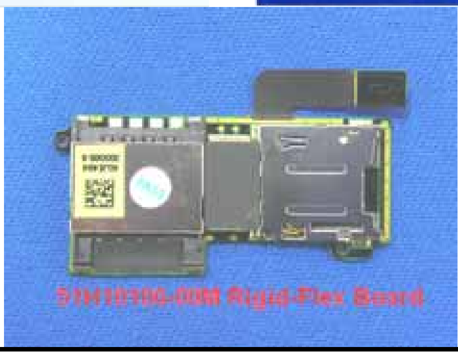
16. Disassemble the camera module from the upper board.



17. Disconnect the AP key FPC connector







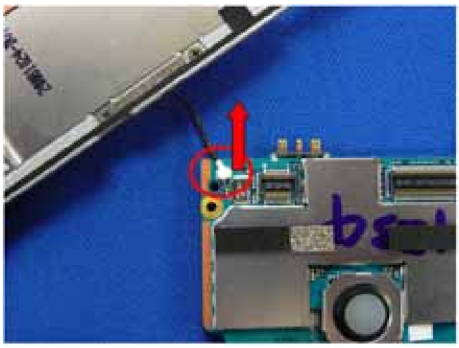
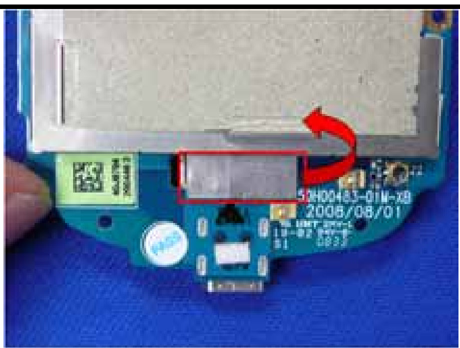
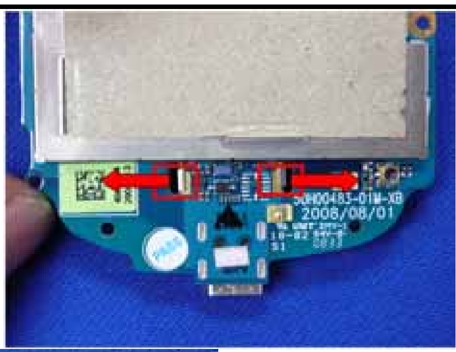
18. Disconnect the Rigid-Flex board connector form the Main board as shown.(1)
19. Use the white stick to separate it

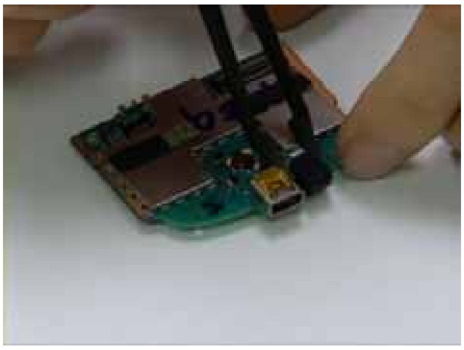
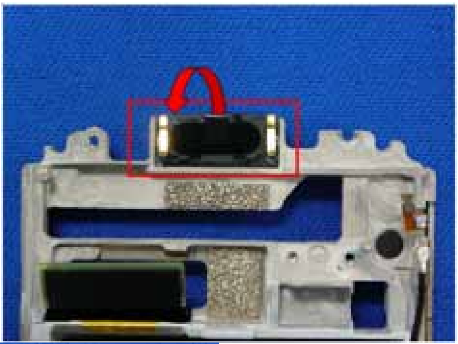
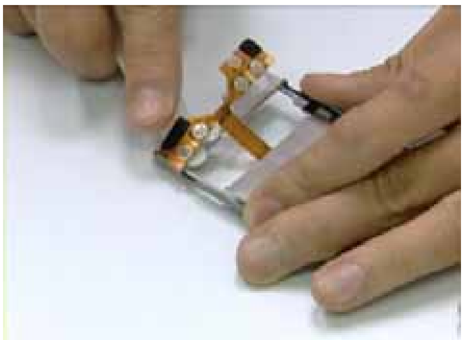
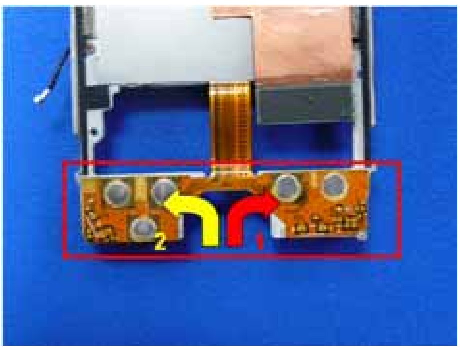


20. Unfasten the screws at location indicated (blue)



21. Disconnect the Main FPC from Main board and remove it

	22. Remove the Main Board from Chassis
	23. Unplug the cable from the Main Board.
  	24. Remove the Mylar 25. Release the hook from the Main Board to separate the switch

	26. Remove the Microphone Rubber
  	27. Remove Receiver from Chassis.
 	28. Remove the AP key FPC from Chassis as shown.







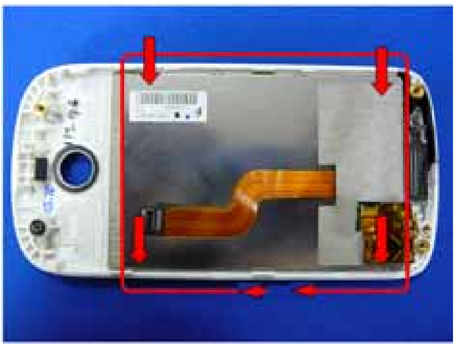
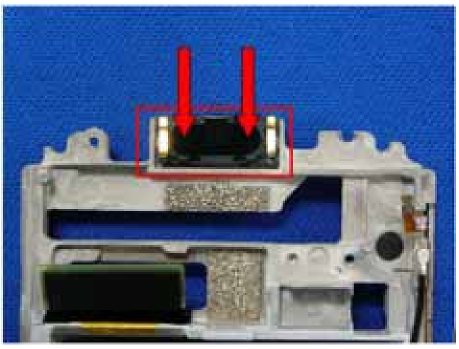
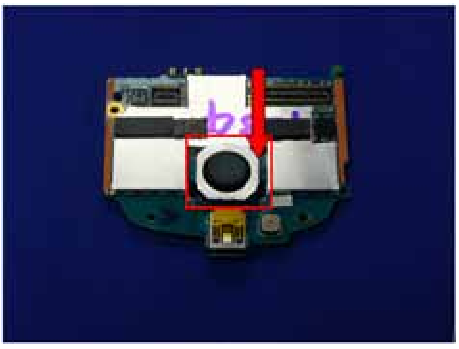


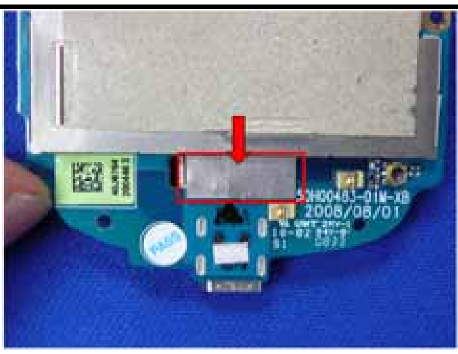
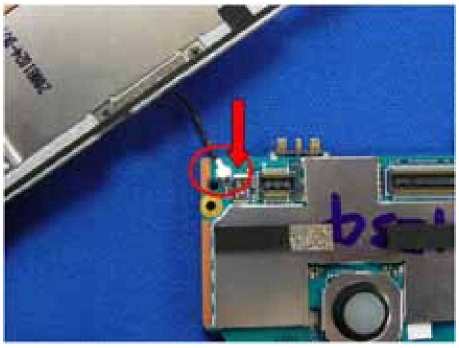
29. Start from the top two corners and Press LCM along the two sides of it to separate the LCM.

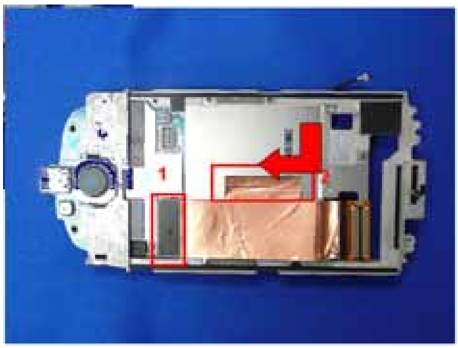


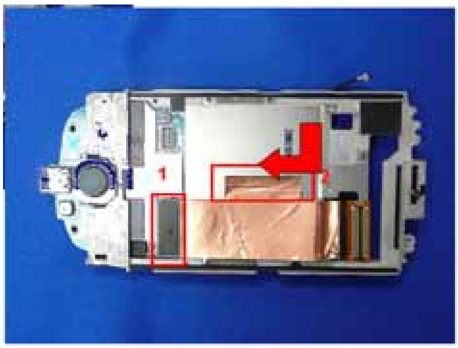
30. Disassembly Completed

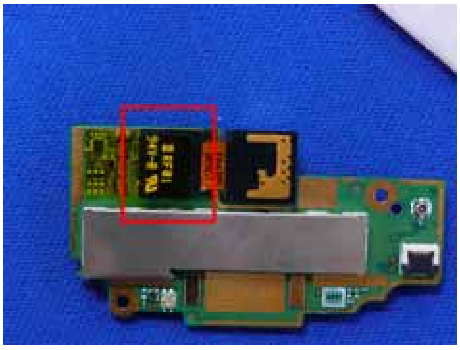
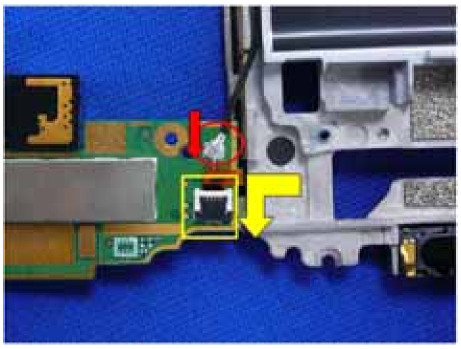
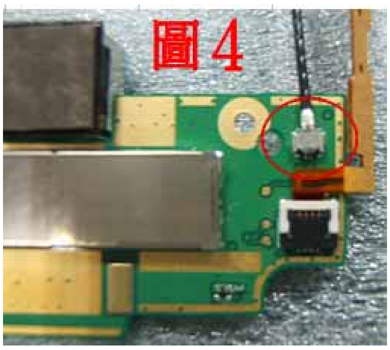
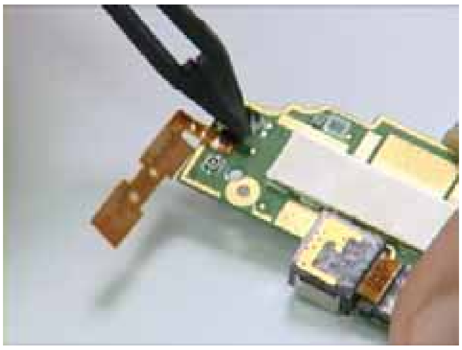
2.2 Assembling procedure

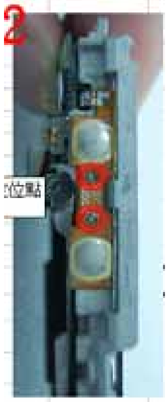
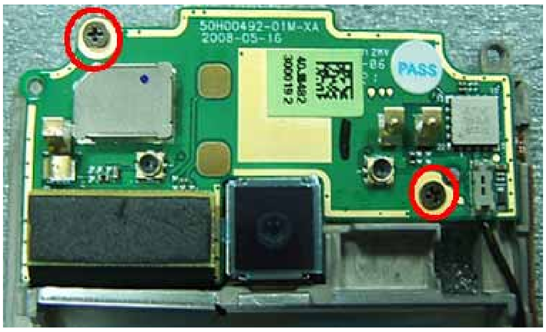
		1. Remove the protect film on the LCM and Combine it will Bezel.
		2. Attach the receiver to Chassis.
		3. Insert the switch hook into the Main Board 4. Stick Mylar on the hook as shown.

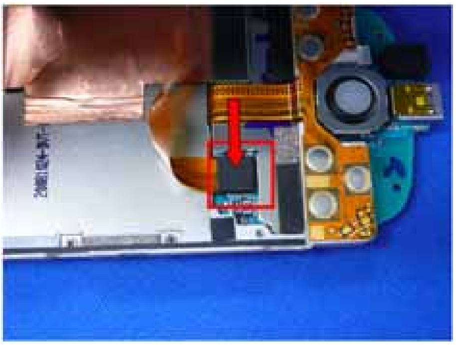
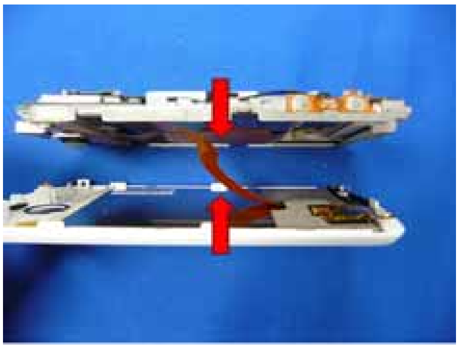
	
	5. Remove the release paper and stick AP key FPC on the Chassis as shown
	6. Connect the cable with the Main board

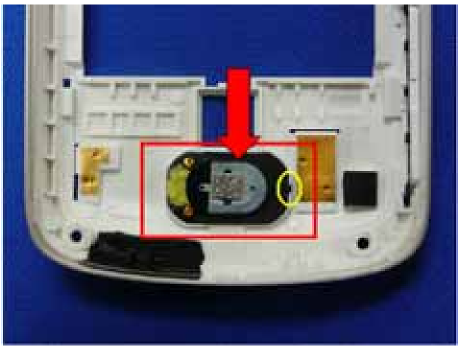
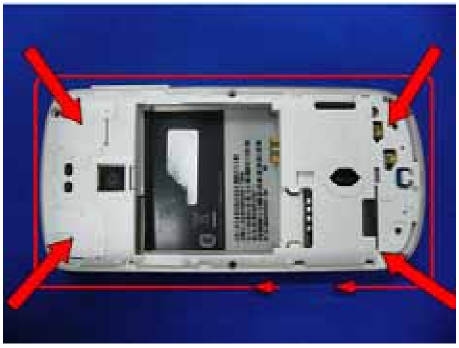
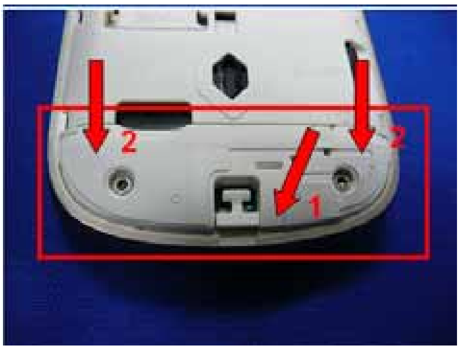
	7. Combine the FPC with Main Board
	8. Fasten the screws at the location indicated Screw:72H01266-01M*2 TORQUE : 1.0+-0.1KGF-C m^2
	9. Connect Main FPC with MB

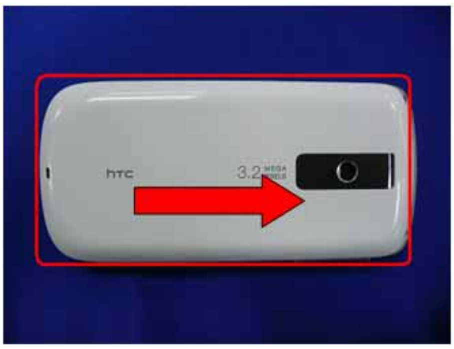
	10. Stick the copper foil as location indicated
	11. Stick the Rigid-Flex Board on the Main Board
	12. Combine the Rigid-Flex board with Main board and stick Rigid-Flex at the location indicated

	13. Install the Camera module on the Upper board
 	14. Connect the cable
	15. Insert the volume FPC into the connector on the upper board.

	16. Attach the Volume FPC to the Chassis
	17. Combine Main FPC upper board as show
	18. Fasten the screws at the location indicated Screw: 72H01266-01M Torque : 1.0+-0.1kgf-c m^2

	19. Insert vibrator as shown
 	20. Combine LCM FPC with Main-Board as shown.
	21. Fasten two screws as shown Screw: 72H01266-00M Torque : 0.8+-0.1kgf-c m²

	22. Attach the speaker to the Housing.
	23. Combine Housing with Bezel
	24. Combine the antenna with Housing as shown

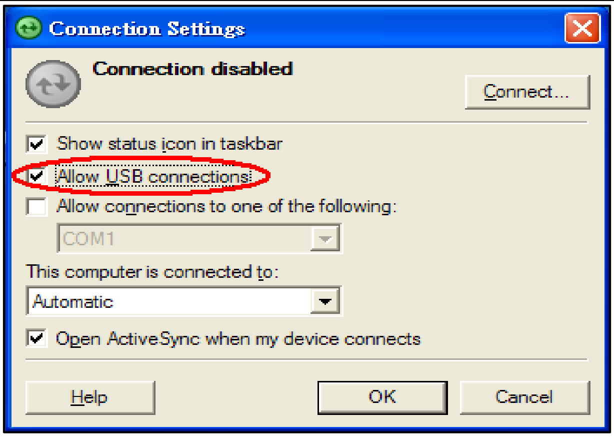
  	25. Fasten the screw as location indicated Torque : 1.0+-0.1kgf-c m^2
	26. Insert battery into housing.
	27. Assemble the Battery Cover

3 ROM Re-flash Procedure

3.1 ROM upgrade thru RUU (Re-flash Upgrade Utility)

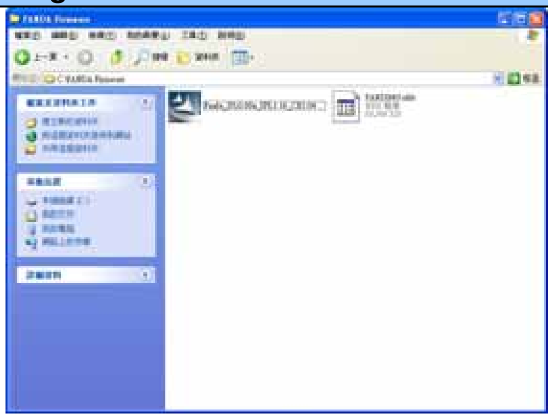
Connect device to PC

I. Setting and allow USB connections in Microsoft ActiveSync.
II. Connect your device and desktop/ or laptop via USB cable.
III. Check the pop-up message from Microsoft ActiveSync when device is synchronized with PC.



Download ROM Image from SDO

I. Download OS image from SDO.
http://htcscm10.htc.com.tw/SDO
II. Un-zip the file and execute RUU program.



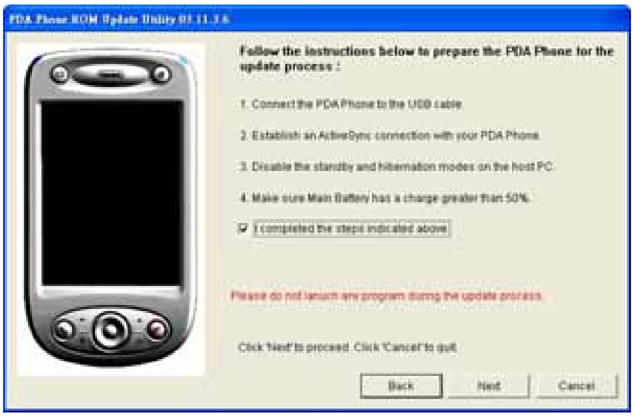
RUU - 1

III. Read the pop-up message form ROM update utility and select the "I understand…" checkbox.
IV. Click "Next" to proceed.



RUU - 2

V. Read the pop-up message form ROM update utility to follow and perform the instructions and select the "I completed…" checkbox.
VI. Click "Next" to proceed.



RUU - 3

VII. Current image version confirmation.
VIII. Click "Update" to proceed.



RUU - 4

IX. Double verify the ROM revision which you want to update before re-flash procedure.

X. Click "Next" to proceed.



RUU - 5

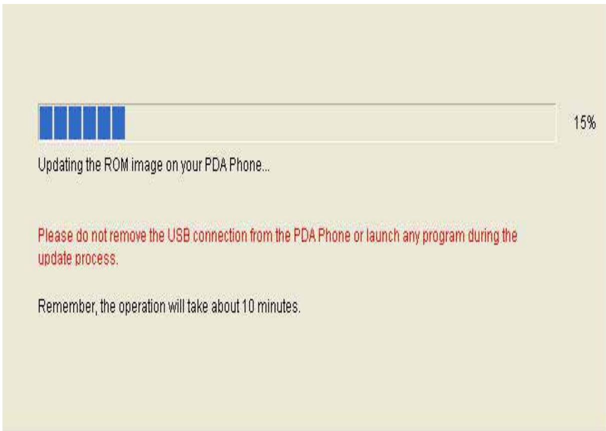
XI. Read the information from pop-up message and the OS update procedure will takes 10 minutes long.

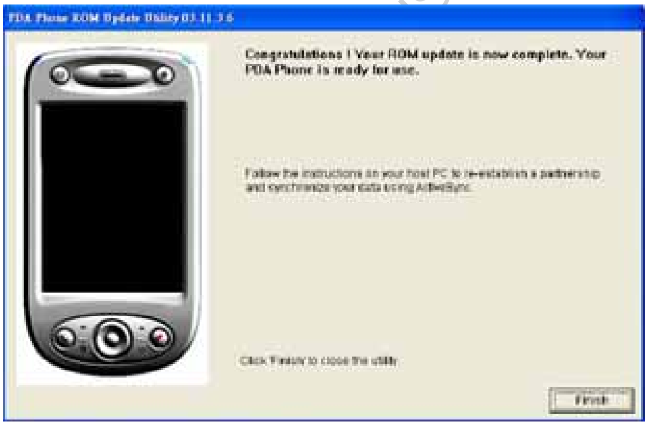
XII. Click "Next" to proceed.



RUU - 6

XIII. You can see the update progress from your PC and in your device.



RUU - 7	
XIV. The OS upgrade is finished, click "Finish" to close the utility.	

3.2 Rom Image upgrade thru SD card

Download ROM Image from SDO

I. Download ROM image from SDO. http://htcscm10.htc.com.tw/SDO

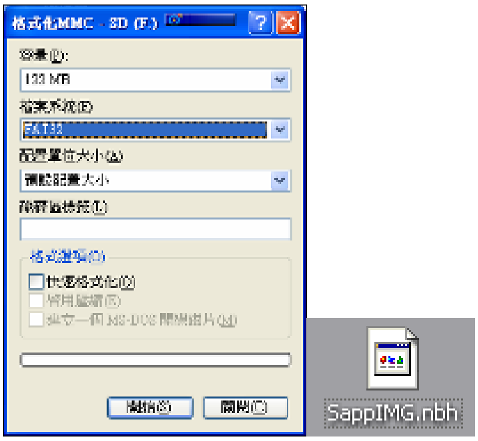
II. Un-zip the image file.



Format SD card and copy image file to SD card

III. Select file system and format the SD card to FAT32 mode.

IV. Copy image file sappIMG.nbh to the micro SD card and rename to **SAPPIMG.NBH**.

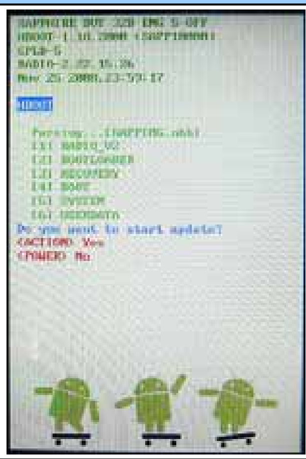


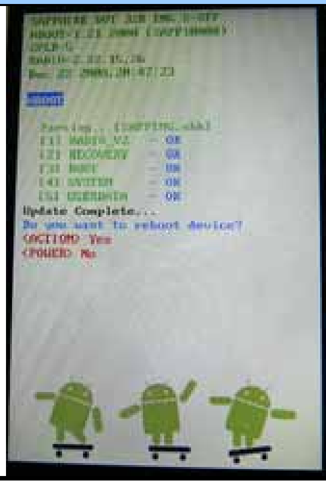
SD Upgrade - 1

V. Turn the device power off and insert Diagnostic SD card.

VI. Hold Volume down and press the power button to entry Boot loader mode.

VII. Press **Action** button to start upgrade procedure.



SD Upgrade - 2	
VIII. Reading source code from SD card. [Note]: This process will takes 10 mins, please don't power off the device. IX. After finish, press **Action** button to reboot.	

4 DIAGNOSTIC PROGRAM

4.1 List of Diagnostic / WinCE Test Items

Mode	No	Item	Description	Remark
Diagnostic	Function Test			
	1	Auto	Auto Regular Tests **(SD card, Vibrator, Display, B.L, etc...)**	
	2	SDRAM Test	RAM memory test.	
	3	Display Test	Color bar/R/G/B/Black/White/Gray pattern.	
	4	Button Test	Send, Home, Return, End(Power), Menu, Volume up, Volume down, Up, Down, Left, Right, Action.	
	5	LED Test	Red, Green, Blue, UI, Key Led	
	6	Back Light Test	Back light test Level (0/1/2/3/4)	
	7	Touch Test	Touch panel test	
	8	Vibrator Test	Vibrator on test.	
	9	SD Card Test	SD door test, SD card Read/Write test.	
	10	ROM Checksum	ROM checksum	
	11	SIM Test	SIM card test	
	12	G-sensor calibration	G-sensor calibration	
	13	Audio Test	Headset, Receiver audio test	
	Run-in Test			
	1	1 Hour	1 Hour Run-in Test	Option
	2	2 Hours	2 Hours Run-in Test	Option
	3	4 Hours	4 Hours Run-in Test	Option
	4	8 Hours	8 Hours Run-in Test	Option
	Format Storage			
	Device Info			
	Check WLAN calibration status			
	Check SKU ID			

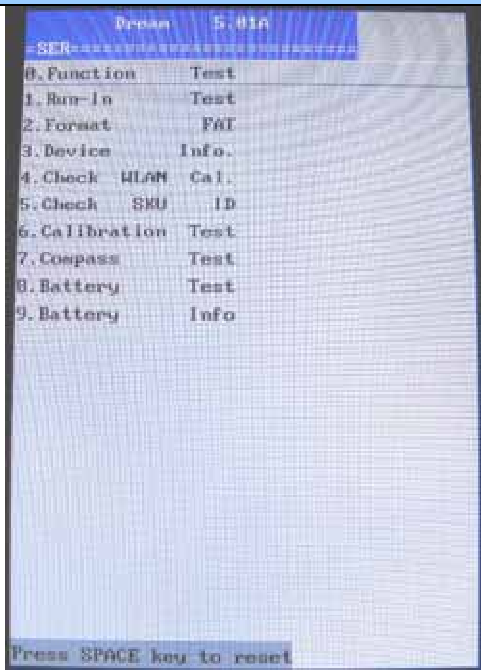
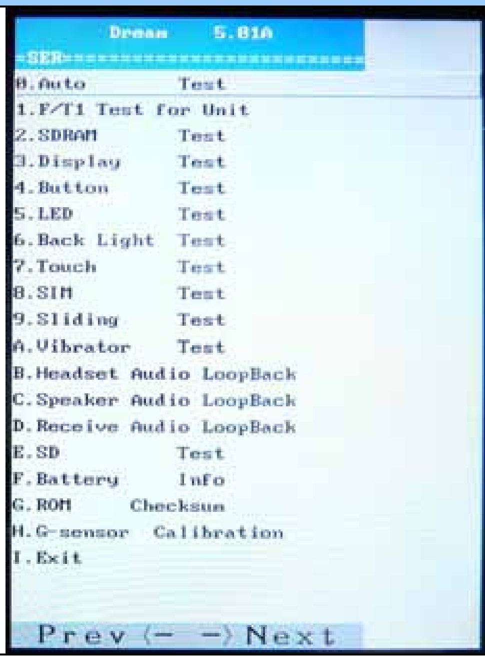
	Calibration Test (Perform WLAN calibration)			
	Compass Test			
	Battery Test (1H)			
	Battery info.			
Android	1	USB Test	USB link test	
	2	Camera Test	Camera test	
	3	Bluetooth Test	Bluetooth test	
	4	GPS Test	GPS test	
	5	WLAN Test	WLAN test	
	6	Speaker Test	Speaker test	

Test Procedure

How to select test item: Using navigation button -"Up" or "Down" to select the test items

How to execute the test program: Press "Action" button to start each of test items.

Diagnostic

Main Menu/Function Test Menu	
I. Turn the device power off and insert Diagnostic SD card. II. Press and hold **Volume down** button, then press **Power** button to enter Diagnostic mode. III. Using the Vol_up or Vol_down button to select the test item. (Also you can press the hot key 0 ~ I to perform the test item) IV. Select item "Function Test" to find the Function test menu.	
Auto Test	
I. Press the Action key to start the Auto test. II. It will perform the regular tests, please follow the system instruction to do the test.	

SD card Test

I. Insert the SD card and follow the system instruction to do the test.

II. If success, press Action key to next or return to Function test menu.





Vibrator Test

I. Press Action key to select <u>Vibrator Test</u> on Function test menu.

II. Press Action key to next or return to Function test menu.



Display Test (Color bar / Red pattern)

I. Press Action key to select <u>Display Test</u> on Function test menu.

II. After the test pattern is show up, please check the pattern if any un-uniform color or chromatist.

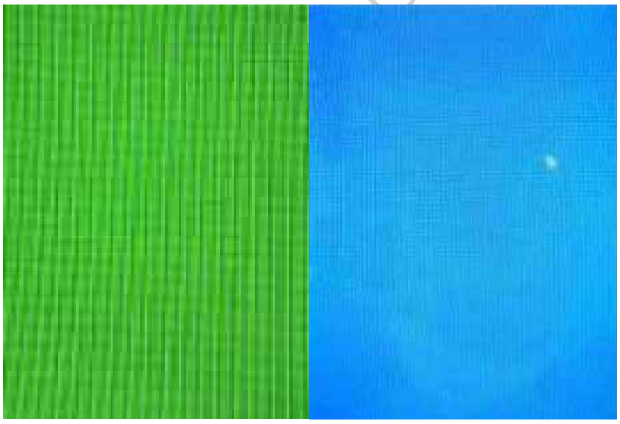
III. Press Action key to continue the next test pattern.





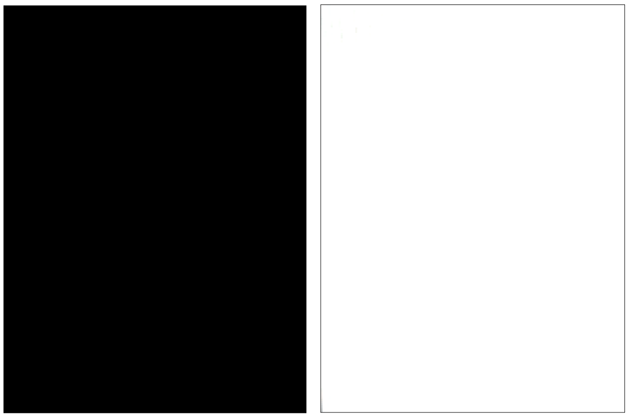
Display Test (Green / Blue pattern)

IV. Press Action key to continue the next test pattern.



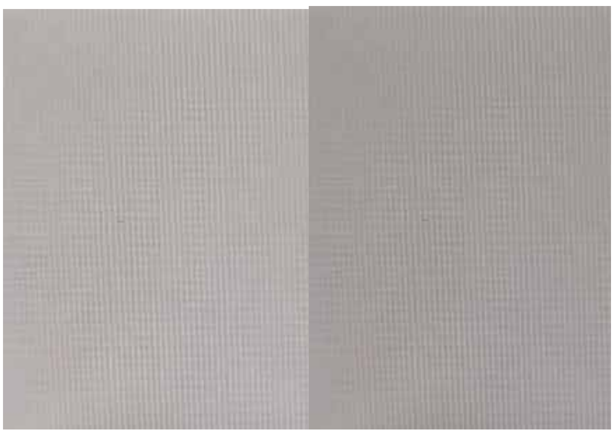
Display Test (Black / White pattern)

V. Press Action key to continue the next test pattern.



Display Test (Gray pattern)

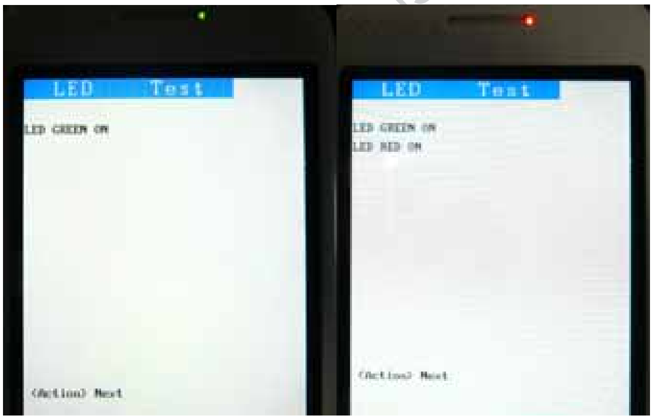
VI. Press Action key to continue the next test pattern.

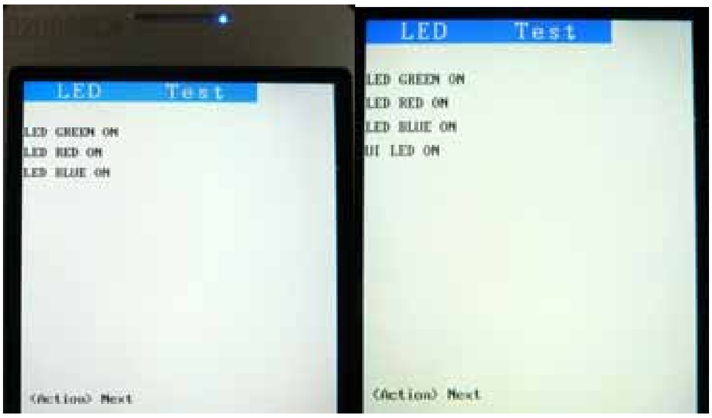


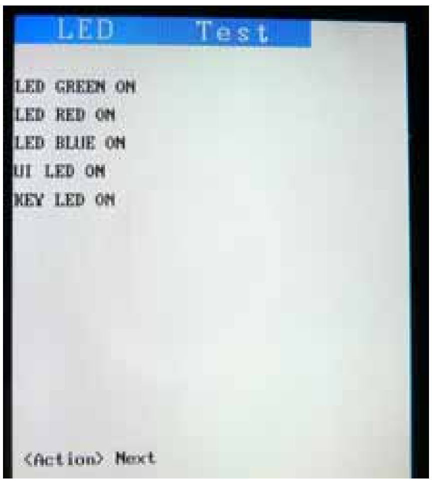
LED Test

I. Press Action key and follow the instruction on screen to perform the LED inspection test **(Green, Red, Blue, UI LED and Key LED)**.

II. Press Action key to next or return to Function test menu.

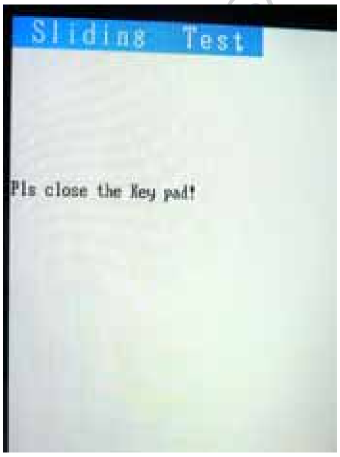






<table>
<tr><th colspan="2">Sliding Test</th></tr>
<tr><td>I. Press Action key to select <u>Sliding Test</u> on Function test menu.

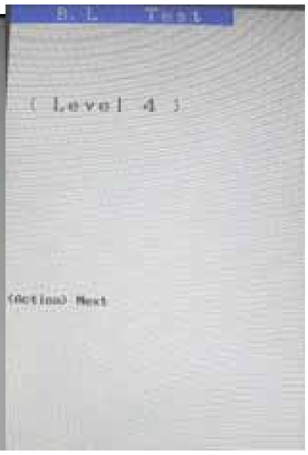
II. Follow the instruction on screen to perform open and close the key pad.

III. The screen will go to the next test or return to Function test menu.</td><td></td></tr>
<tr><th colspan="2">Button Test</th></tr>
<tr><td>I. Press Action key to select <u>Button Test</u> on Function test menu.

II. Follow the instruction on screen to perform the Button/Key test <u>(Volume up, Volume down, Menu, Send, End, Home, Back, Up~ Right, Action, Focus, Capture and Keyboard test)</u>.

III. The screen will go to the next test or return to Function test menu.</td><td></td></tr>
<tr><th colspan="2">Back Light Test</th></tr>
<tr><td>I. Press Action key to select <u>Backlight Test</u> on Function test menu.

II. Press Action key to switch the LCD backlight level from Level 0, Level 1, Level 2, Level3, Level 4.

III. The screen will go to the next test or return to Function test menu.</td><td></td></tr>
</table>

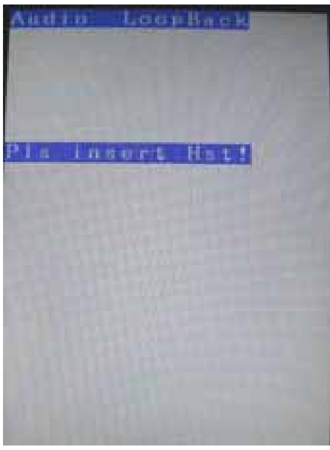
Headset Audio Test

I. Press “B” key or select <u>Headset Audio Test</u> on Function test menu.

II. Insert the headset and speaking.

III. You can hear the sound output from the headset.

IV. Press the action to exit the test.





Receiver Audio Test

I. Press “C” key or select <u>Receiver Audio Test</u> on Function test menu.

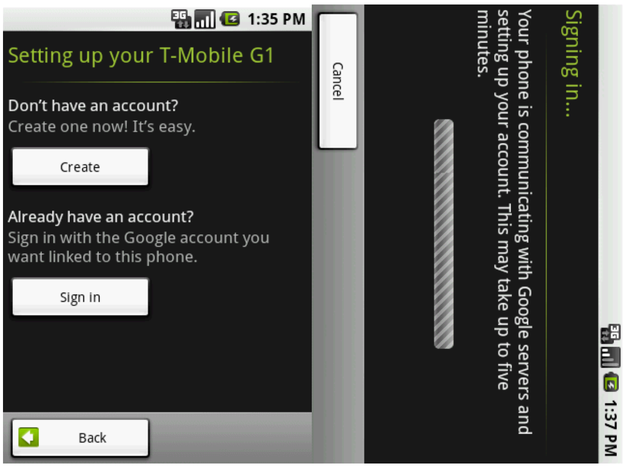
II. You can hear the sound output from the receiver.

III. Press the action to exit the test.



Android Test

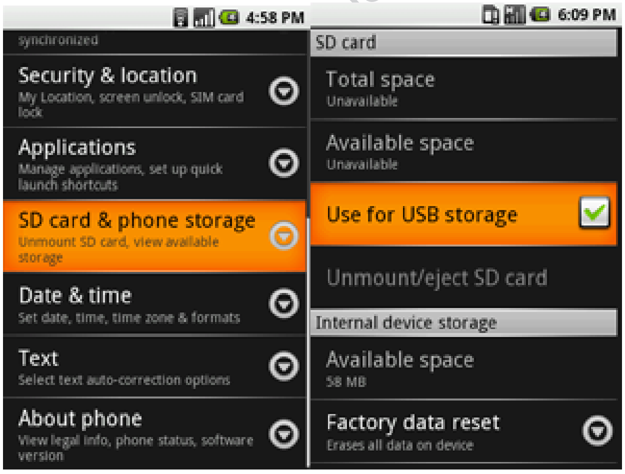
Test Requirement:
- 3G SIM card
- Google account

Sign in	
I. Insert the 3G SIM card. II. Signing in the Google account and enter to the system.	
III. Follow the test item of the service manual to perform the function test.	

USB Test

I. Select to use your memory card as USB mass storage when your phone is connected to your computer (selected by default or press Menu>Settings>SD card & phone storage>Use for USB storage)

II. Insert USB cable and connect device to computer then you can view and manage the SD card storage from your computer.



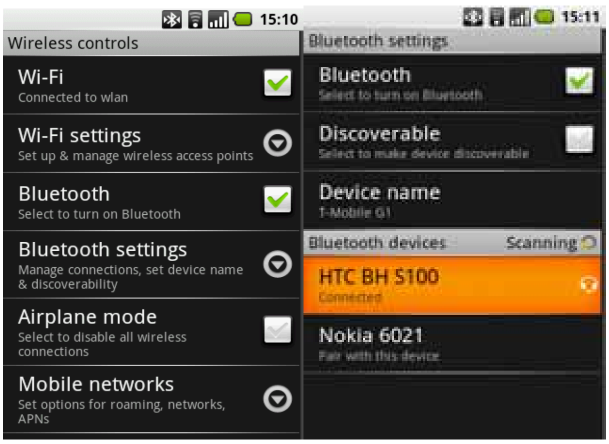
Camera Test

I. Tap the application tab and press Camera icon to turn on the Camera.
II. Make sure the device will present and enter the preview display.
III. Check camera pre-view and image quality.
IV. Photo Test:
(1). Press Capture key.
(2). Press Capture key again.
(3). Tap 'Delete' icon on the preview screen.



Bluetooth Test (BT headset)

I. Press Menu button.
II. Tap the icon "Settings".
III. Select Wireless controls, and then select the Bluetooth check box to turn on Bluetooth services.
IV. To pair with a device in the list, select it.
V. Once the other Bluetooth device shows "connected" status, you can start using it to make and receive phone calls.

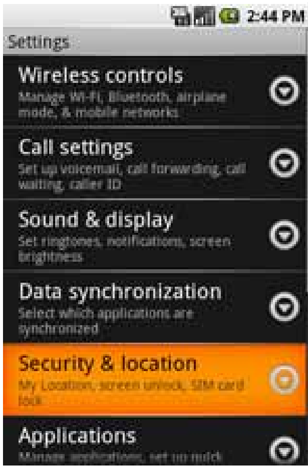


GPS Test

I. Press Menu button and tap the icon "Settings".

II. Select "Security & location".

III. Select My Location settings to "GPS satellites".



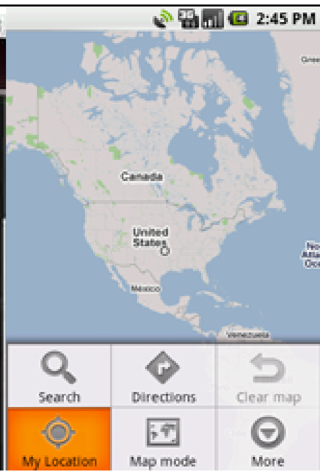


IV. Tap the application tab and press the Maps icon to enter to the Google Map.

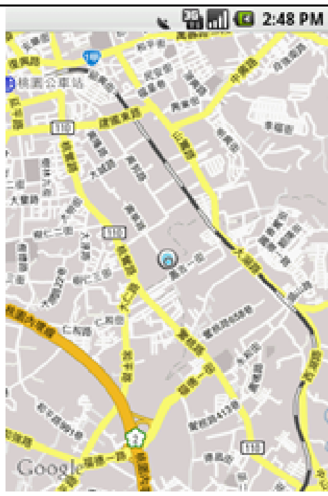
V. Press Menu button and select "My Location".

Note: The device should test at you can view of sky area or within connection extension antenna area.





VI. The screen should appear your location on the map.



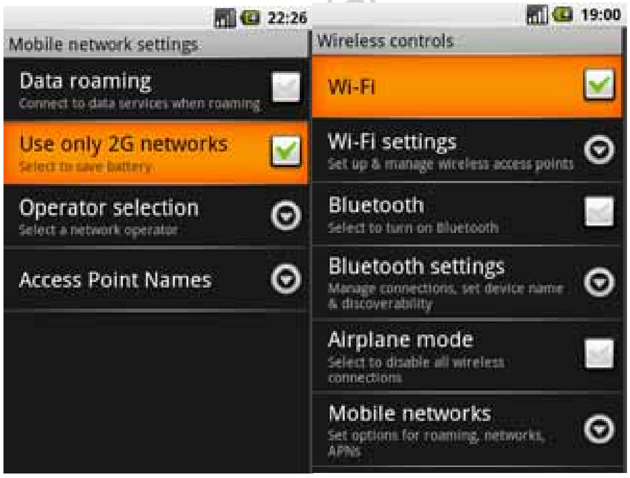


WLAN Test

I. Press Menu button and tap the icon "Settings".

II. Select "Wireless controls" > select the "Mobile networks" > select "USE only 2G networks" check box.

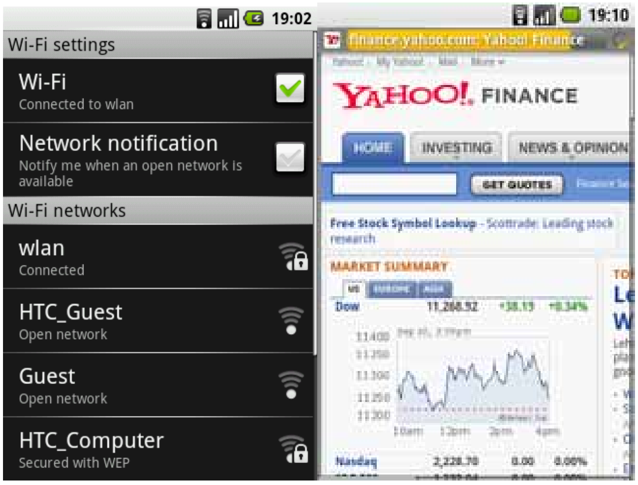
III. Select "Wireless controls" > select the "Wi-Fi" check box to turn on Wi-Fi services and open the "Wi-Fi settings" screen.



IV. View and scan for available network.

V. Connect to a network - Select it from the network list. (Provide your username or password if required.) And you can see the icon appear on the status bar when Wi-Fi service connected.

VI. Make sure the device can access to the internet via Wi-Fi network.

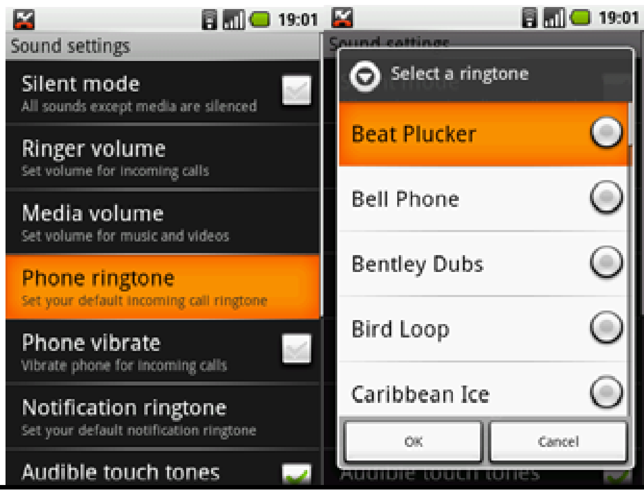


Speaker Test

I. Press Menu button and tap the icon "Settings".

II. Select "Sound & display" > select the "Phone ringtone".

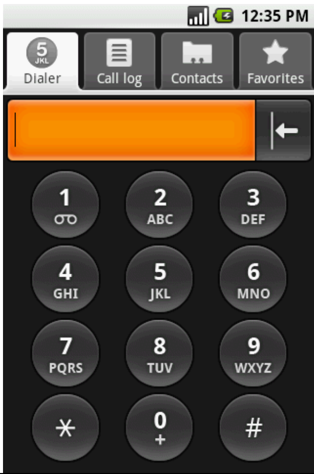
III. Select and play a ringtone then check the sound quality from the speaker.



RF Test

I. Press Call Button to dial for performs the RF test.

II. Also you can test by mobile tester.







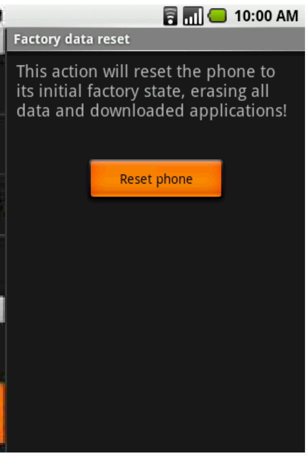
Erase all test data

I. Before shipping you should erase all test data on the phone.

II. Press Menu button and tap the icon "Settings".

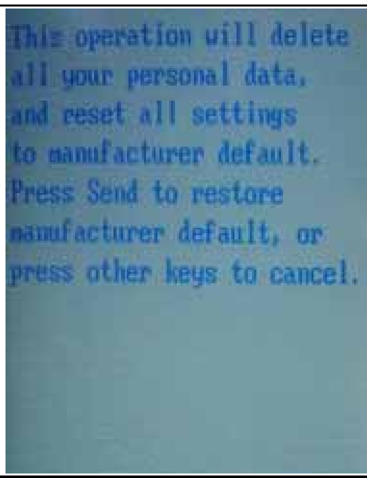
III. Select "SD card & phone storage" > Press the "Factory data reset" and press the "Reset phone" button.





IV. Also you can perform the hard reset when the device is power off.

V. Press and hold Home + Back Button then press Power Button.



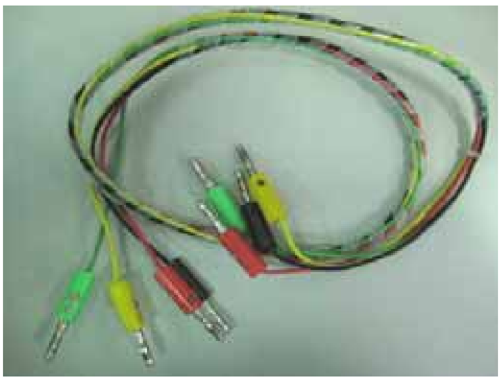
Power measurement test

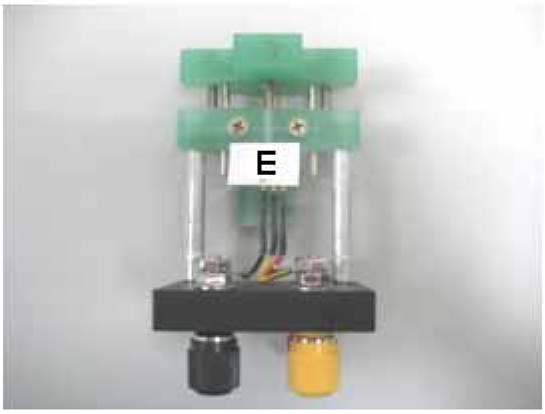
4.2 Main board leakage current Test Procedure

This is a quick method to measure if any abnormal leakage current on main board which caused high power consumption compare to GOOD main board.

Requirement：

- Power Supply
- Micro-current Meter
- Current series JIG
- CABLE
- Battery JIG

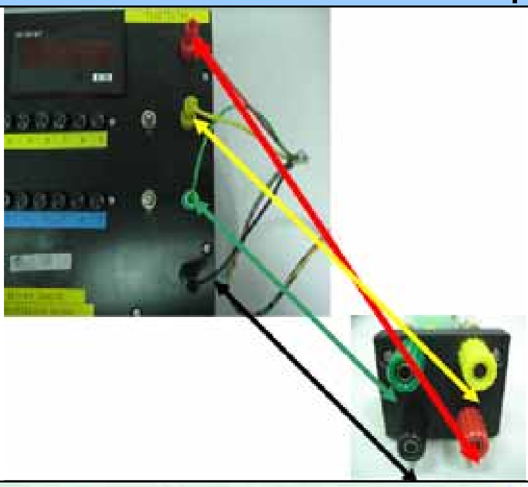
Equipment list	
	1.Control box
	2. Four colors cables Cable A: Red Cable B: Yellow Cable C: Green Cable D: Black



3. Test Jig

Jig - E (3 pins-Long for Dream)

Equipment set up



Connect control box and jig through

4 colors cable



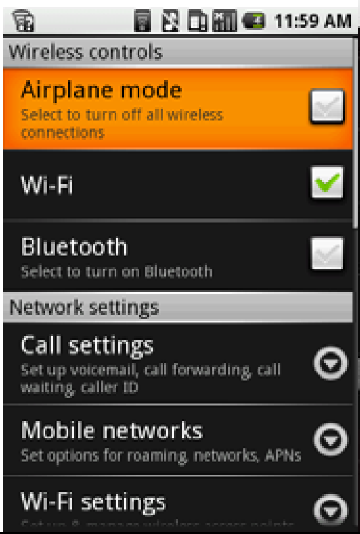
Set up each button by row A~D
according to product specification
Following is an example for Sapphire

MADEL	JIG TYPE	Mode Code			
		A	B	C	D
Sapphire	E	0	8	X	0

It means, press button A=0,B=8,C=X,D=0
(X=Don't care, the Dream battery only 3 pins)

	Install the jig to device
Start testing	
 	Turn on control box power button
 	Press power button to turn on the Device

Idle current test





1. Set the device to airplane mode.
2. Set the brightness to minimum(Press MENU>Settings>Sound & display>Brightness)



Measure the idle mode current.
The idle current value must under 70mA.
If out of the criteria, it means the devices is fail and please replace M/B or daughter board for repair.

Sleep current test



Power off the device and measure the sleep mode current.
The sleep current value must under 3mA.
If out of the criteria, it means the devices is fail and please replace M/B or daughter board for repair.

Conclusion:

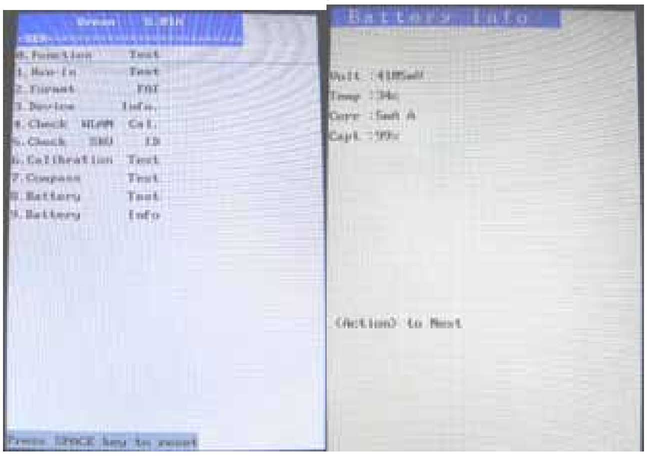
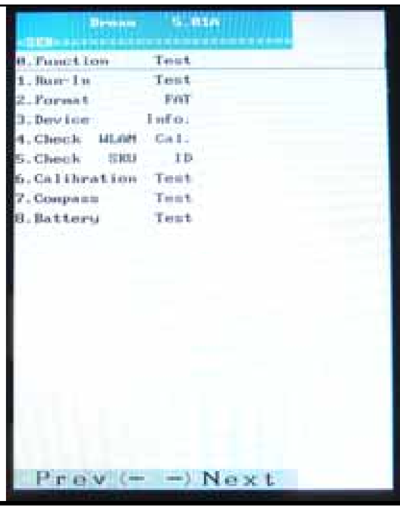
If current consumption is passed at both of flight and power off mode, it means M/B is GOOD.

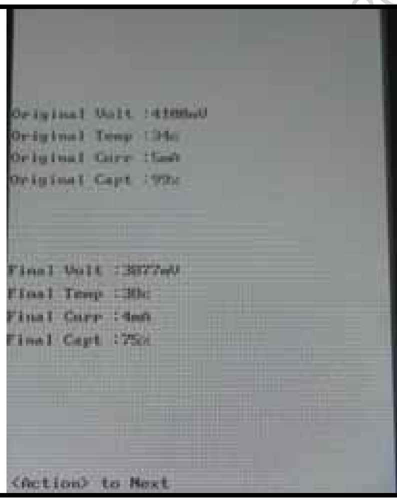
If there is any item FAILED at flight or power off mode, it means M/B is failed, please replace M/B for repair.

Measurement parameter

Measurement mode	Measured Current	REMARK
Flight Mode (Idle mode)	Under mA	MB is good
	Over 105 mA	Fail, MB need to be further repaired
POWER OFF (Sleeping mode)	Under 3 mA	MB is good
	Over 3 mA	Fail, MB need to be further repaired

4.3 Battery rundown test procedure

Battery Test	
I. Turn the device power off and insert Diagnostic SD card. II. Press and hold **Capture** button, then press **Power** button to enter Diagnostic mode. III. Select item "Battery Info" to check the battery capacity.	
IV. If the battery has been fully charged, please perform the "Battery Test".	

V. After one hour, check the test result. VI. If the capacity is under 70%, please replace a new battery.	

5 Cosmetic Inspection Criteria

5.1 Classes definition of inspective area

- Class A area => The front side of main unit involve all buttons and LED lens except LCD.
- Class C area => 4 sides and back views of main unit.
- Class D area => The socket of battery, inner side of battery cover.

Photo of inspection areas

CLASS A	
CLASS C	
CLASS D	

IT IS GENERIC COSMETIC INSPECTION CRITERIA FOR ALL PRODUCTS IF THERE HAVE ANY CONFLICT WITH THESE GENERIC CRITERIONS; PLEASE FOLLOW THE PRODUCT INSPECTION CRITERIA RESPECTIVELY.

Description

- **D**: Diameter / **L**: Length / **W**: Width / **N**: Number of defects/ **S**: Distance from dot to dot
- Inspecting distance: 30 ± 5cm / Mechanical inspection angle：90 degrees /
- LCM inspection angle：90±15 degrees / Inspection time:5 secs per surface.
- Ambient illumination is to be 500-1100 lux
- The inspection condition of Newton ring:
  a. Inspection distance: 30cm / Inspection time: 5 sec
  b. Ambient illumination is to be 500-1000 Lux (Incandescent lamp)
  c. Inspection should be performed under the condition that LCD screen could reflect the mirror image of lamp.
  d. The criteria of Newton ring’s tinges and measure of area must follow up the worst-case sample.

5.2 Display inspection

Inspection Defects			Accept Level	Level
Electrical Characteristic Defects	Bright Dots	Single	Red+ Green+ Blue ≦ 3, S ≥ 5mm.	Minor
		2 adjacent	0	Minor
		3 or more adjacent	0	Minor
	Dark Dots	Single	Total Number ≦ 2, S ≥ 5mm.	Minor
		2 adjacent	0	Minor
	Dark or Bright lines		0	Minor
	All Allowable Dots Defects		Total Number ≦ 3, S ≥ 5mm.	Minor
	Shift and tilt of screen viewed area		The black edge around display area must be detected by front view.	Minor
Foreign Scratch, Objects or Lint on power off status	Scratch		0.03 < W ≦ 0.1 (mm) L ≦ 5 (mm), N ≦ 2 (mm)	Minor
	Lint (linear foreign objects)		0.03 < W ≦ 0.1 (mm) 0.3 < L ≦ 3.0 (mm) N ≦ 5	Minor
	Spots		0.1 < D ≦ 0.3 (mm), N ≦ 4	Minor
	Fish eye on film		0.1 < D ≦ 0.4 (mm), N ≦ 4	Minor
	Breakage on film surface		Not acceptable	Minor
	Total acceptable defect quantity ≦ 10			Minor

5.3 Main unit inspection

GAP & STEP INSPECTIONS

Description		Accept Criteria
1.	Gap between ME parts.	≦ 1.5 (mm)
2.	Stylus	Stylus assembly protruding, loose, missing, falling and deformed is not allowed.
3.	Others, refer to production release spec	Others, refer to production release spec

OTHERS

Scratch		
Description	Accept Criteria	
Class A	Exposure of substrate do not accept Scratch : L≦4mm ,W≦0.2mm ,N≦2, S≧10mm	MI
Class C	Label area don't care Exposure of substrate do not accept Scratch : L≦10mm ,W≦0.4mm ,N≦5, S≧5mm	MI
Contamination dot/Granule dot/Cave granule		
Description	Accept Criteria	
Class A	D≦0.5mm ,N≦2,S ≧15 mm (Ignored if D D≦ 0.15mm)	MI
Class C	D<0.9mm ,N≦4,S ≧10 mm	MI
Burr		
Description	Accept Criteria	
Burr.	Don't accept hand scrape	MI
Imprint mark		
Description	Accept Criteria	
Class A	0.25≦diameter≦0.65mm ,N≦3	MI
Bright mark		
Description	Accept Criteria	
Class A	L≦2.5mm,W≦0.25mm,N≦3	MI
Class C	L≦3.0mm,W≦0.3mm,N≦5	MI
Lint		
Description	Accept Criteria	
Class A	L≦3mm , W≦0.2mm ,N≦2, S ≧5 mm	MI
Class C	L≦10mm , W≦0.3 mm ,N≦3	MI

6 Generic Troubleshooting

1. Main Unit Does Not Respond to Power Button

(1) Connect the AC adapter, maybe the battery pack is exhaust and wait few minutes for battery recharging.

(2) Check if battery installed well.

(3) Check the Power Button whether it's damaged.

(4) Replace another battery pack.

(5) Try to start boot-loader mode [refer to section 4.2]. Re-flash ROM if boot loader mode is enabled.

(6) Check all connectors including LCD FPC to Main Board.

(7) Replace Main Board if necessary.

(8) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

2. Touch Panel Does Not Respond to Screen Tap

(1) Check the connection of LCM FPC cable whether is properly connected.

(2) Try to cold boot the unit then perform screen tap again.

(3) Try with another LCM.

(4) Try with another Main Board.

(5) Replace LCM if necessary

(6) Replace Main Board if necessary.

(7) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

3. Buttons Do Not Respond

(1) Try to cold boot the unit then tries again.

(2) Dismantle the unit; check the status of switches on the Main Board and the plastic parts of the Button not responding.

(3) Try with another Main Board or Front Bezel.

(4) Replace Main Board or Front Bezel if necessary.

(5) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

4. Unusual Vertical / Horizontal lines or partial display

(1) Check the connection of LCM FPC whether is properly connected.

(2) Try to cold boot the unit then tries again.

(3) Try to re-flash the ROM code.

(4) Try with another LCM.

(5) Try with another Main Board.

(6) Replace LCM if necessary

(7) Replace Main Board if necessary.

(8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

5. Back Light Does Not Turn ON/OFF

(1) Check the connection of LCM FPC whether is properly connected.

(2) Try to re-flash the ROM code.

(3) Try with another LCM.

(4) Try with another Main Board.

(5) Replace LCM if necessary

(6) Replace Main Board if necessary.

(7) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

6. CF/SD Card cannot be used

(1) Check whether CF/SD Card is fully inserted to the slot until you hear a click.

(2) Try to re-flash the ROM code.

(3) Try with another CF/SD Card.

(4) Try with another Main Board.

(5) Replace Main Board if necessary.

(6) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

7. PC Connection not possible

(1) If test result is NFF, it is possible caused by user connect cradle to computer before ActiveSync is installed.

(2) Check whether "Connection Settings" in the MS ActiveSync is properly set.

(3) Check whether it connects with other cables or cradle, customer's cable might be damaged.

(4) Check the external appearance of the connector on the unit whether it is physically damaged.

(5) Try to re-flash the ROM code.

(6) Replace Main Board if necessary.

(7) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

8. Battery Pack does not start

(1) Make sure the battery cover is closed properly.

(2) Connect to the AC Adapter and see if it takes charge. Also check AC Adapter condition.

(3) Check whether AC Adapter is functioning properly.

(4) Check whether the condition of Battery Charging status is correct.

(5) Check the appearance of Battery Pack if any abnormal..

(6) Try with another Battery Pack or Replace Battery Pack if necessary

(7) Try with another Main Board or Replace Main Board if necessary.

(8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

9. Battery discharges quickly even after fully charged

(1) Make sure the Battery Pack takes fully charge with AC Adapter.

(2) Check whether the condition of Battery Charging status is correct.

(3) Dismantle the unit and check the appearance of Battery Pack.

(4) Try with another Battery Pack or Replace Battery Pack if necessary

(5) Try with another Main Board or Replace Main Board if necessary.

(6) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

10. Battery Pack does not recharge

(1) Make sure the Battery Pack takes fully charge with AC Adapter.

(2) Check whether the condition of Battery Charging status is correct. Charge should be done no more than 4 hours.

(3) Dismantle the unit and check the appearance of Battery Pack.

(4) Try with another Battery Pack or Replace Battery Pack if necessary

(5) Try with another Main Board or Replace Main Board if necessary.

(6) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

11. No Sound from Speaker or Distorted sound

(1) Check “Sound & Notifications” Settings in the unit for Sound Enabling.

(2) Make sure it’s not MUTED.

(3) Try to re-flash the ROM code.

(4) Clean up the speaker connection side on MB if there is any contamination.

(5) Dismantle and Check whether the Speaker is properly installed (Orientation)

(6) Replace Speaker if necessary.

(7) Replace Main Board if necessary.

(8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

12. No Recorded Sound or Distorted sound

(1) Check “Sound & Notifications” Settings in the unit for Sound Enabling.

(2) Make sure it’s not MUTED.

(3) Try to re-flash the ROM code.

(4) Dismantle and Check whether the Microphone is properly installed.

(5) Replace Microphone if necessary.

(6) Replace Main Board if necessary.

(7) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

13. Wireless connection (WLAN/BT) not functioning

(1) Make sure the wireless environment is OK before connecting to WLAN.

(2) Make sure the wireless connection setting has properly set.

(3) Make a life connection with Internet or another device.

(4) Try to re-flash the ROM code.

(5) Try with another main board if necessary

(6) Once the defective part has been identified, verify the defective part again whether the symptom could be duplicated with another unit.

7 Generic Labeling Plan

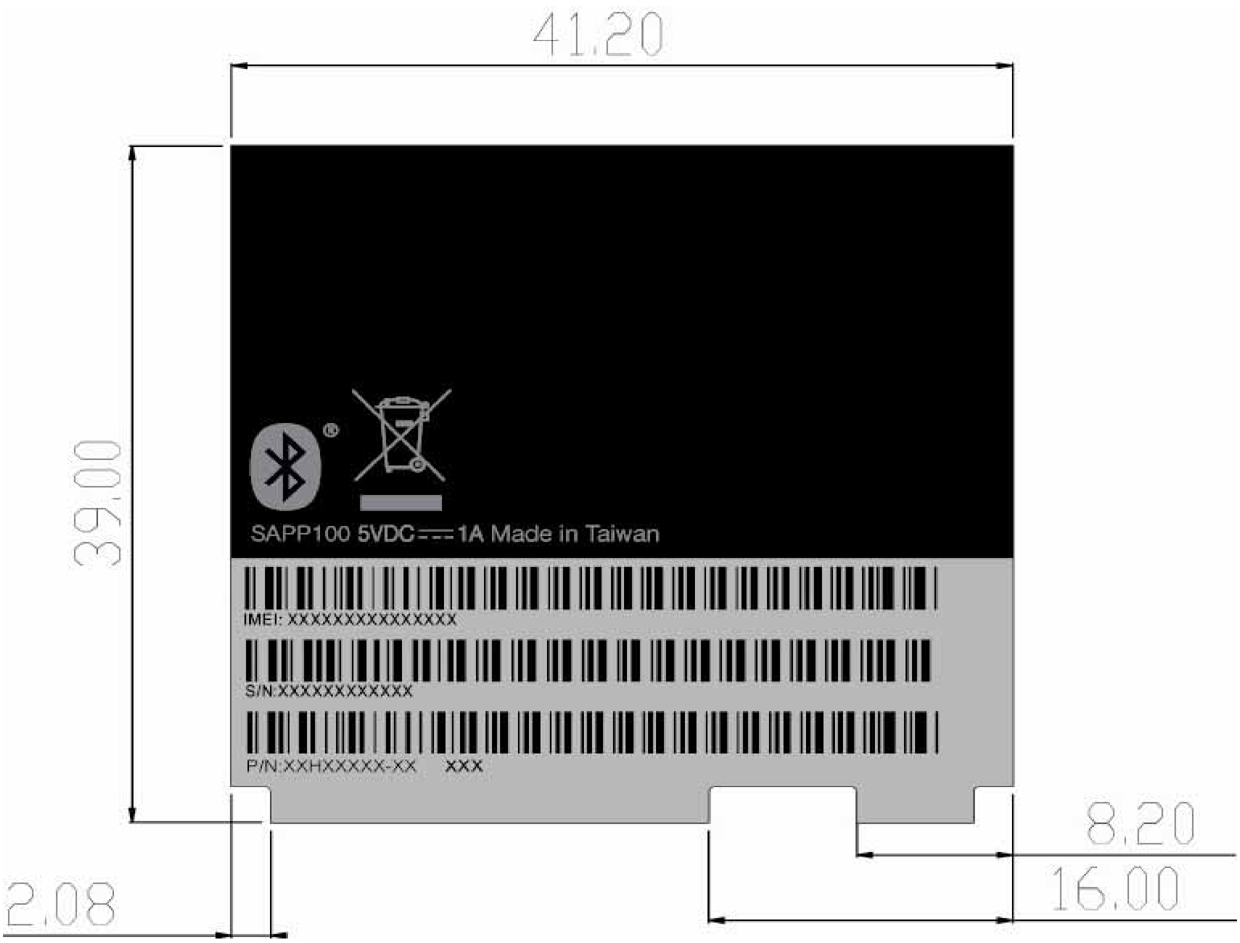
■ Main unit

7.1Agency label_SAPP100_Black

The brand name is shown on Bezel.

HTC P/N: 77H00693-00M

Size: 41.2 X 39.00mm



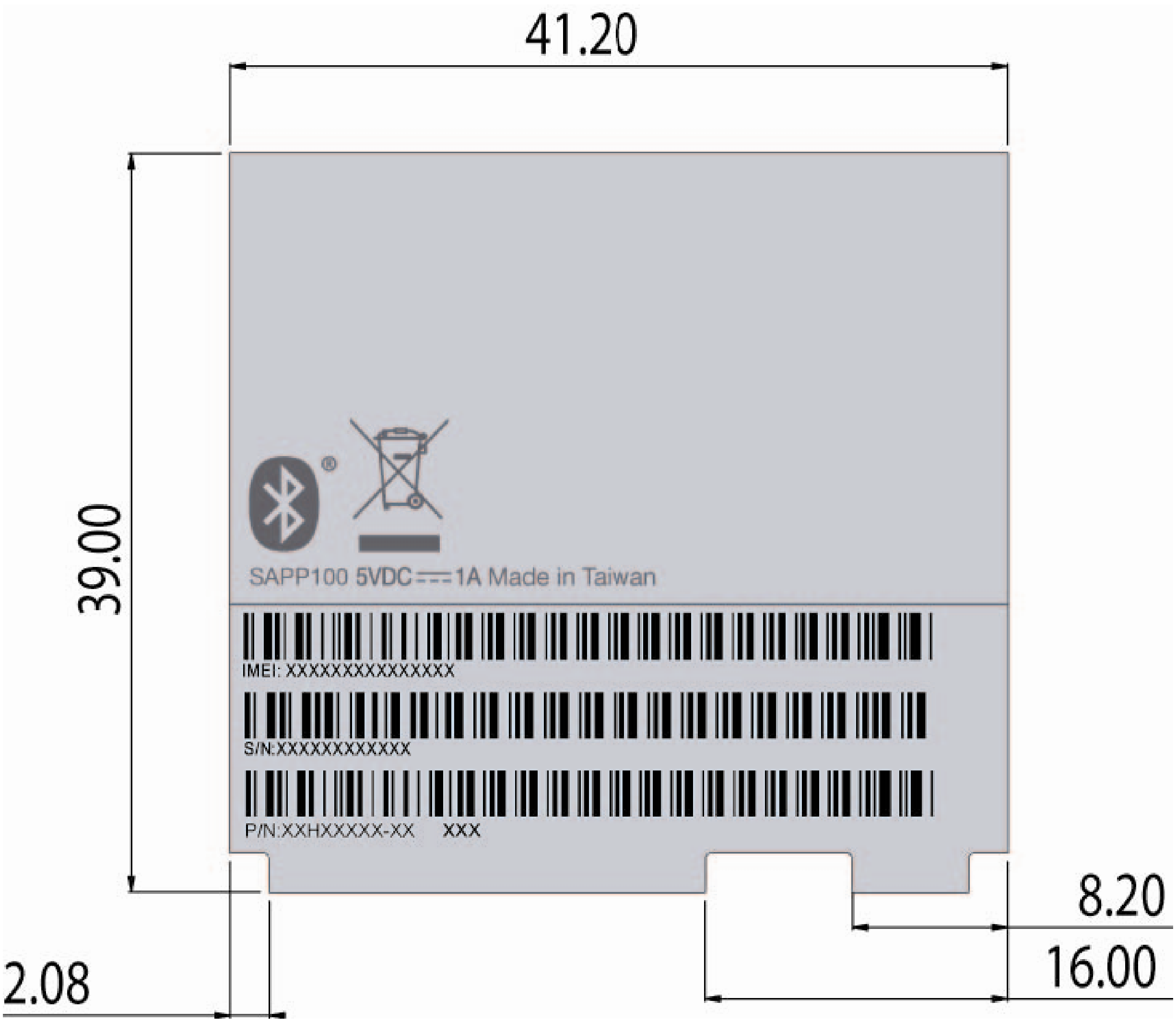
HTC P/N	Description

7.2 Agency label_SAPP100_Gray

The brand name is shown on Bezel.

HTC P/N: 77H00693-02M

Size: 41.2 X 39.00mm



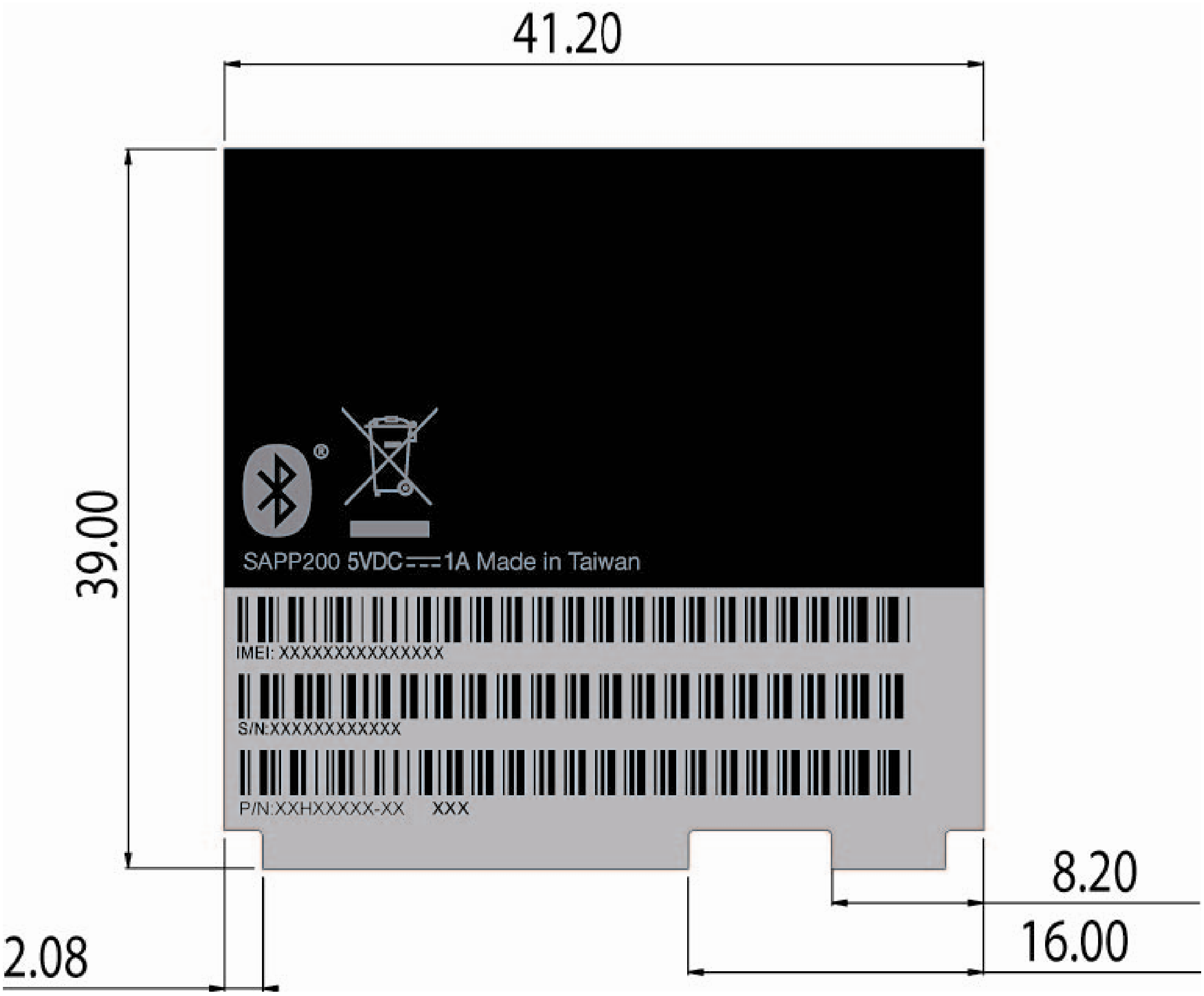
HTC P/N	Description

7.3 Agency label_SAPP200_Black

The brand name is shown on Bezel.

HTC P/N: 77H00693-01M

Size: 41.2 X 39.00mm



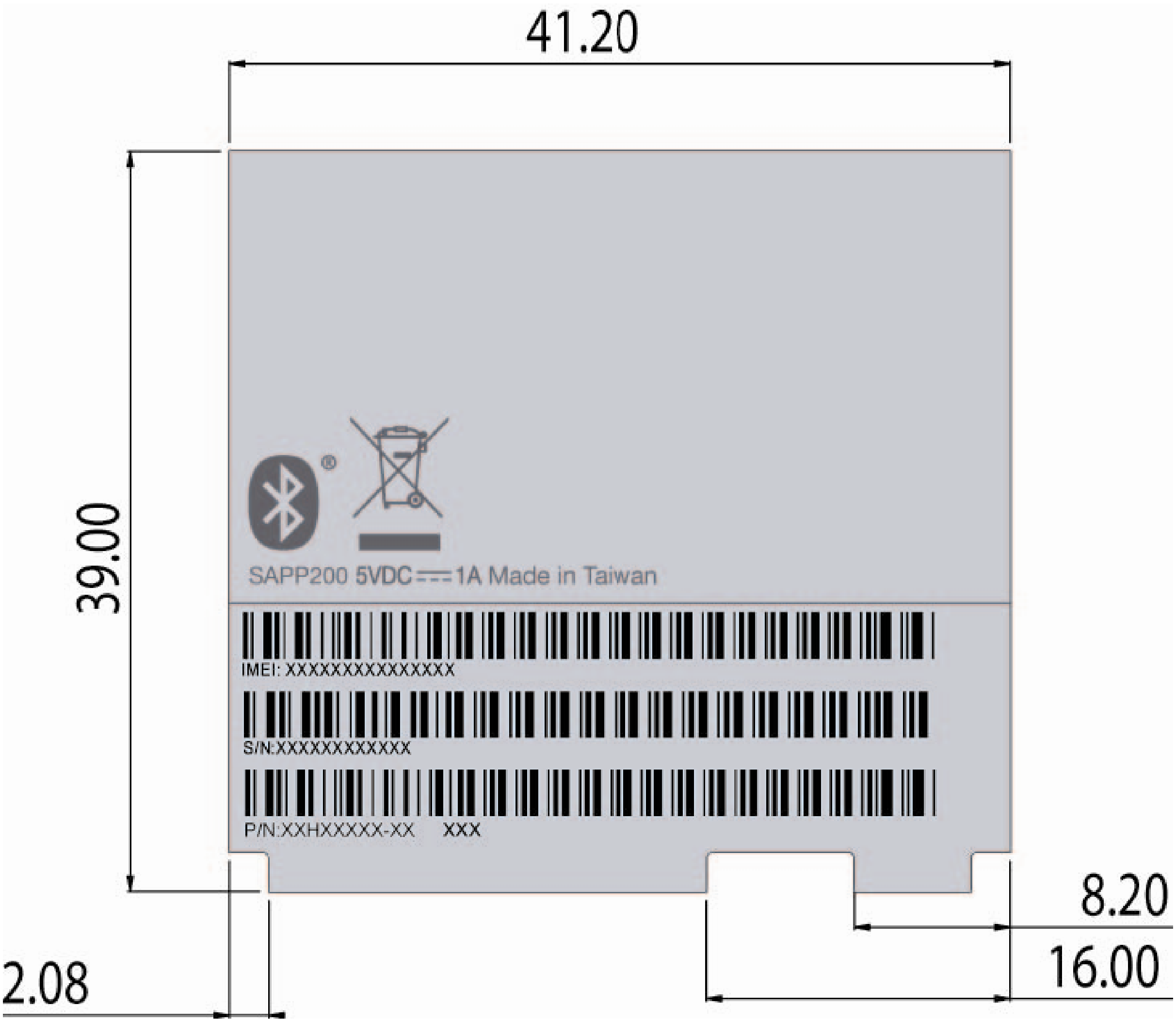
HTC P/N	Description

7.4 Agency label_SAPP200_Gray

The brand name is shown on Bezel.

HTC P/N: 77H00693-03M

Size: 41. 2 X 39.00mm



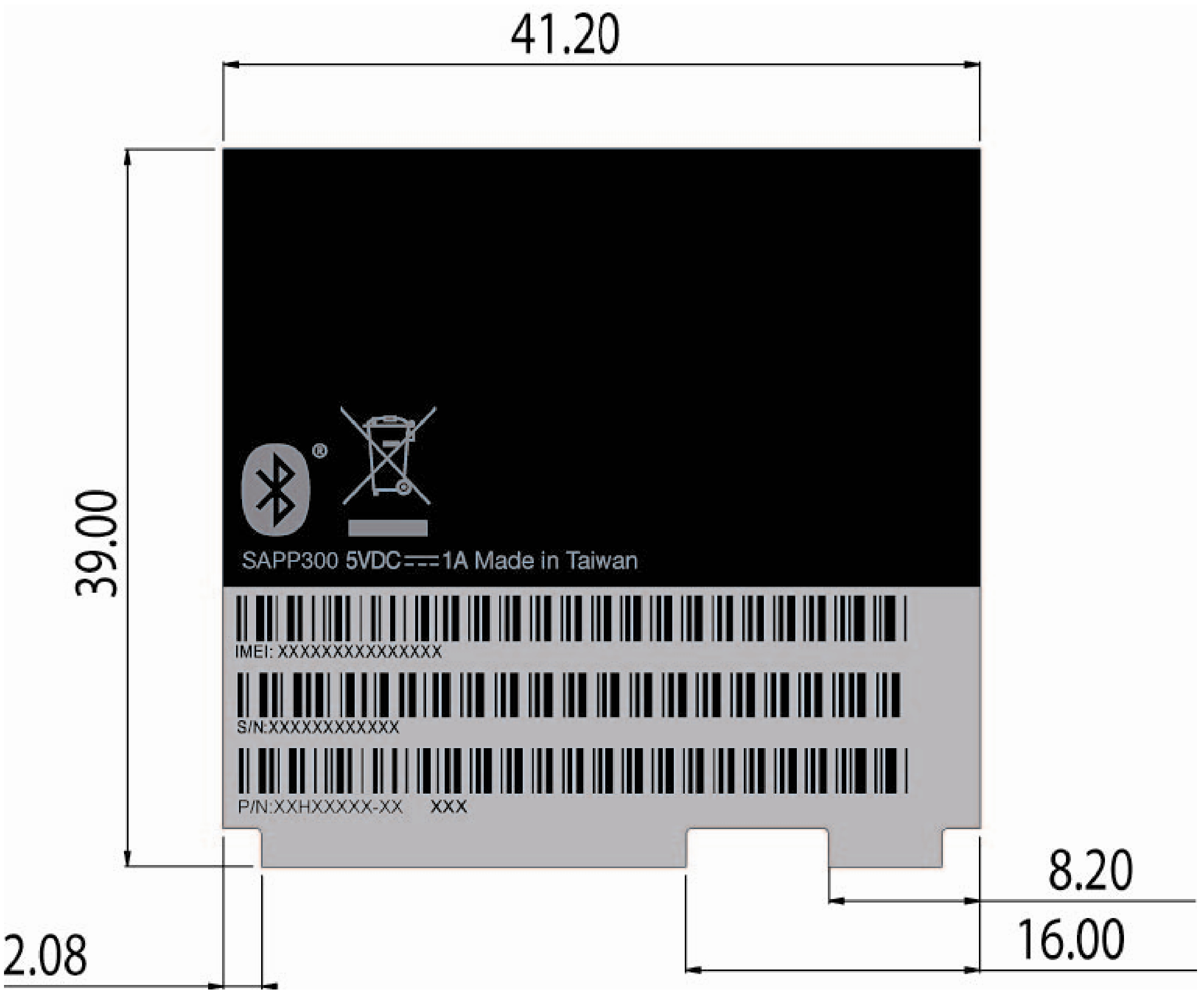
HTC P/N	Description

7.5 Agency label_SAPP300_Black

The brand name is shown on Bezel.

HTC P/N: 77H00693-04M

Size: 41.2 X 39.00mm



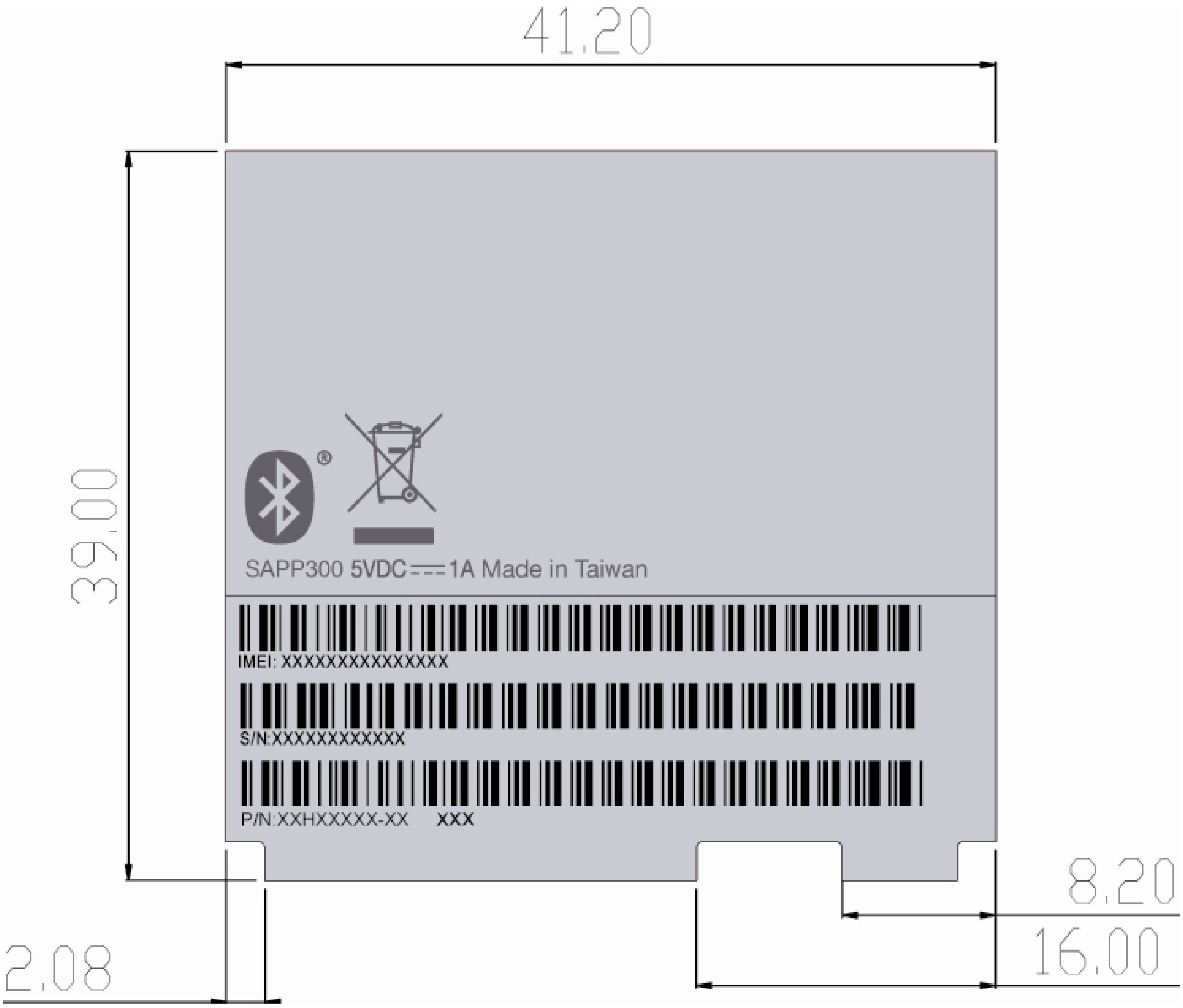
HTC P/N	Description

7.6 Agency label_SAPP300_Gray

The brand name is shown on Bezel.

HTC P/N: 77H00693-05M

Size: 41.2 X 39.00mm



HTC P/N	Description

7.7 Unit label location explanation

Water sensitive label

HTC P/N: 77H00668-00M

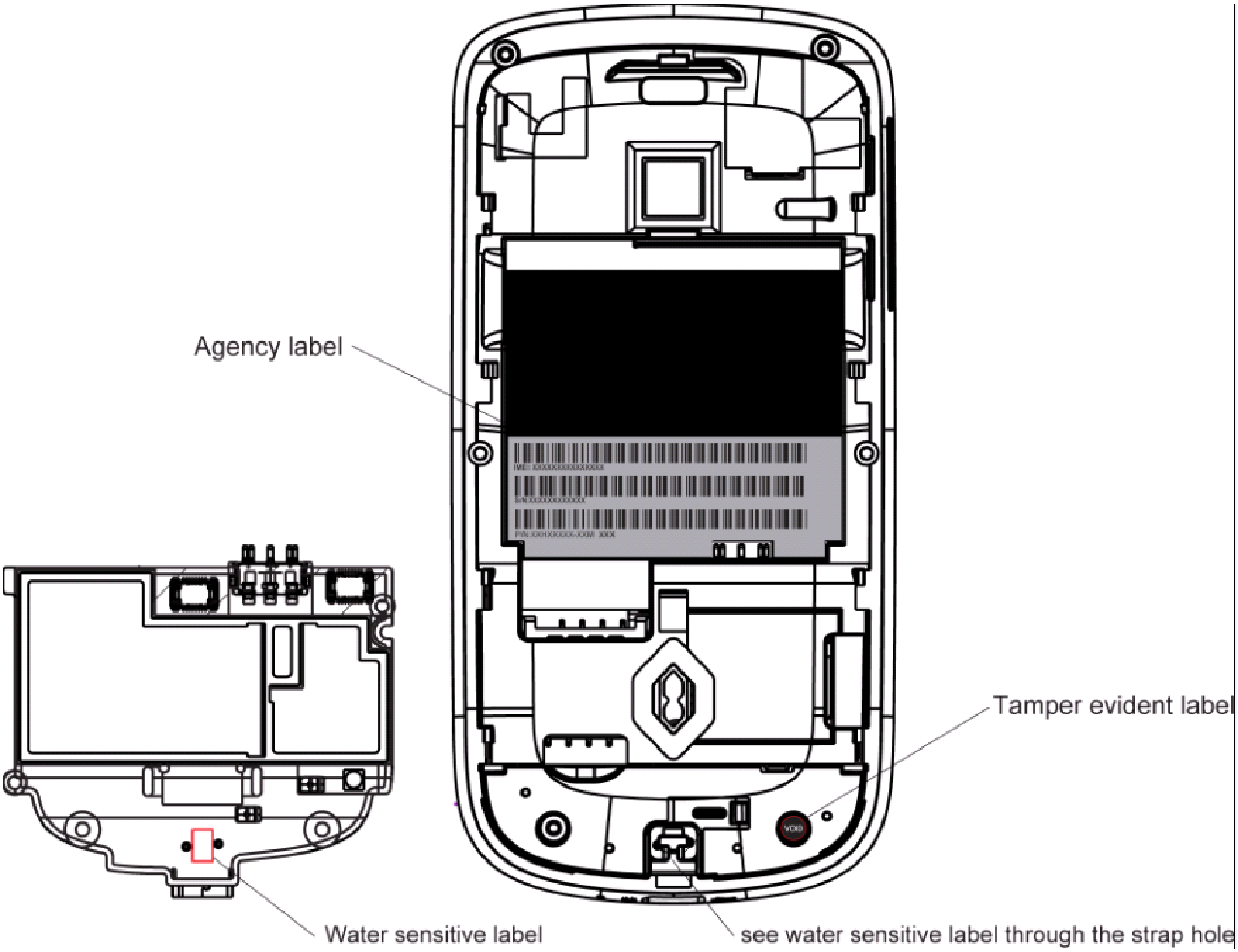
Qty: 1

Tamper evident label

HTC P/N: 77H00460-01M(Black) for Sapphire with black housing

77H00460-01M(White) for Sapphire with white/gray housing

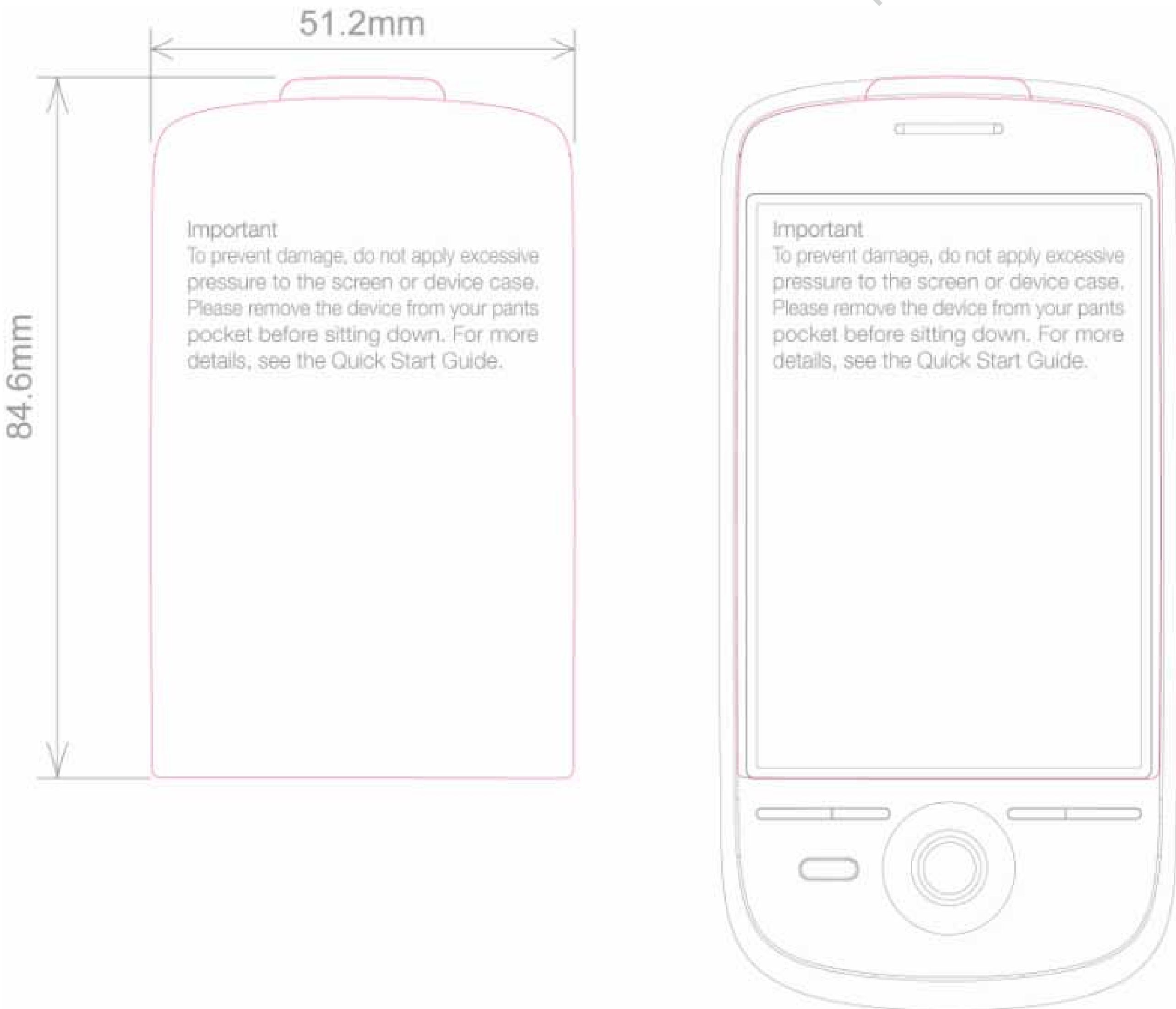
Qty: 1



7.8 Screen protector

HTC P/N: 76H10040-00M

Size: 51.2 x 84.6mm



7.9 Battery label

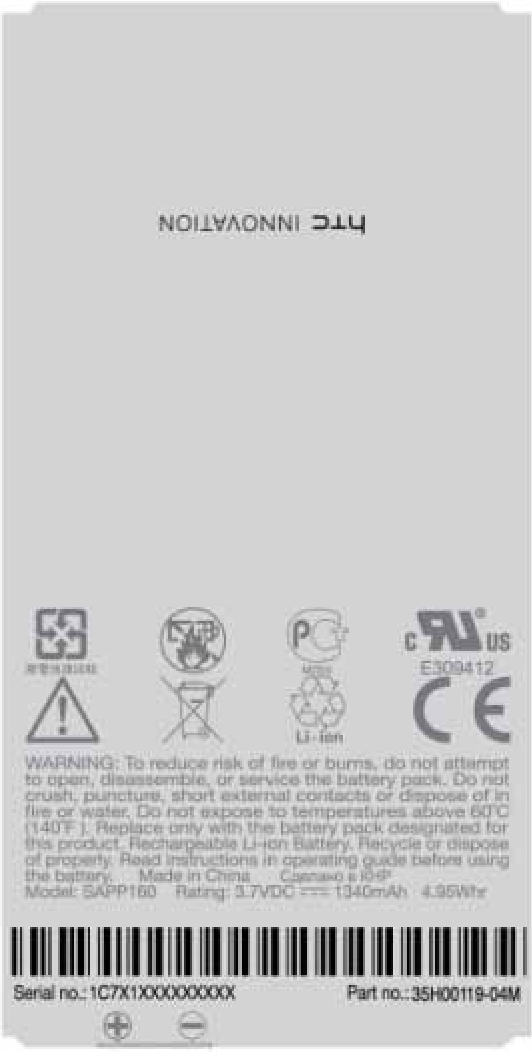
SAPP160_1340mAh_TWS

HTC P/N: 35H00119-00M (Black)

35H00119-04M (Gray)



black C
cool gray 9C
cool gray 5C



底色：灰色　色差值：L:77.58 a:-0.39 b:0.96
字色：cool gray 11C
條碼色：黑色

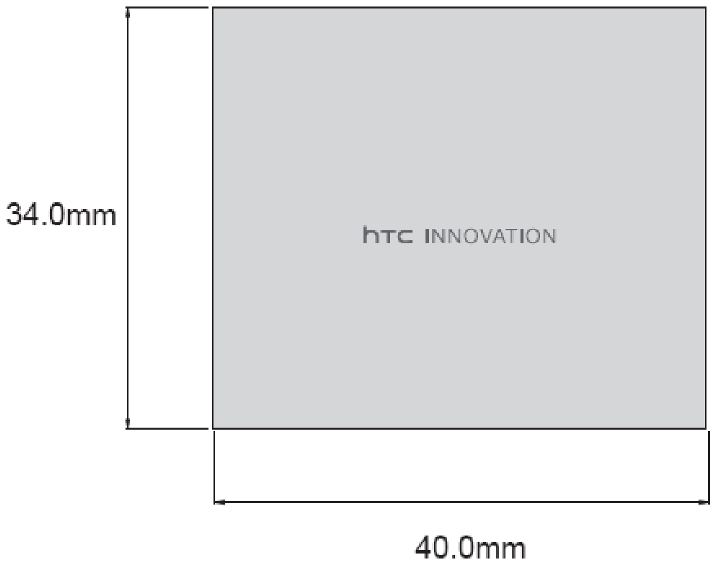
7.10 **SAPP160_1340mAh_Welldone**

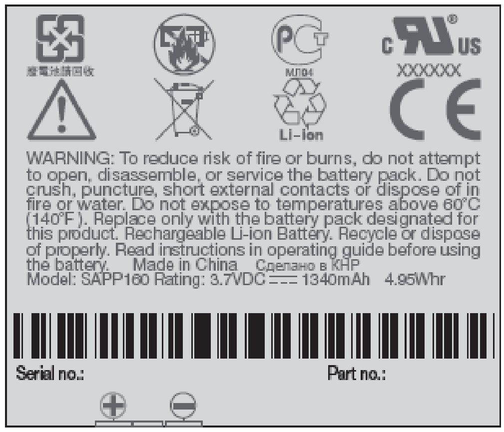
HTC P/N: 35H00119-01M (Black)

35H00119-05M (Gray)



SAPP160 1340mAh





7.11. MFG packing label

single box label (not confirmed)

HTC P/N: 77Hxxxxx-xxM

Size: xx.0 x xx.0mm

HTC P/N	Description

12 in 1 carton label (not confirmed)

HTC P/N: 77HXXXXX-00M

Size: 4 X 6 inches

HTC P/N	Description

pallet label

HTC P/N: 77H30026-00M

Size: 4 X 6 inches

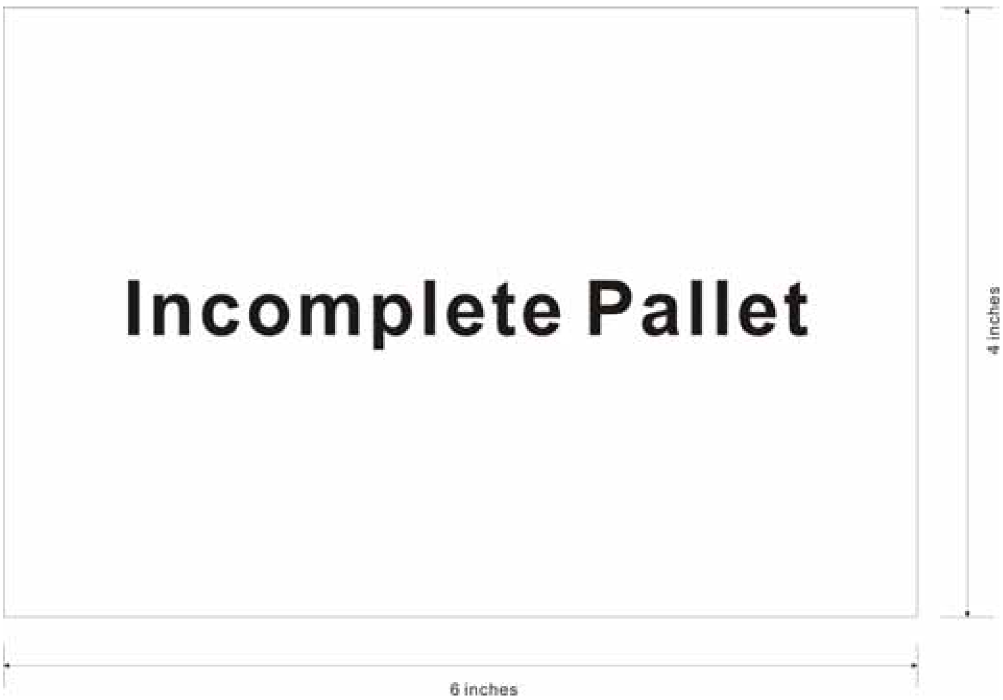


HTC P/N	Description

Incomplete pallet label

HTC P/N: 77H30026-00M

Size: 4 X 6 inches



8 Generic Spare Part List and Photos

Parts P/N and Photos for RC/ASP to identify.

8.1 SPL for Repair

Item	P/N	Description	Qty	Substitute
1	35H00082-00M	BATTERY_LI-POLYMER,1050mAh,3.7V,A94CA010F,SIMPLO,60/-20degC,54.1*39.7*5.25mm	1	
2	36H00486-00M	Speaker,MERRY,DSH962-002	1	
3	36H00523-00M	Vibrator,JT0406-30CSR1,JNTECH,Cylindrical,3V,100mA,12000+/-3000 rpm,60/-20degC,11.2*5.1*5.8mm	1	
4	36H00524-00M	Receiver,DTR882-002,MERRY	1	
5	51H00386-00M	PCBA-MAIN BOARD,w/WIFI,Mega SIM,EU,VOX	1	
6	51H10053-00M	Rigid-Flex Board ASSY,VOX	1	
7	54H00211-00M	Camera Module,DCM-200MES,LITE-ON SEMICONDUCTOR,SOC2020 sensor,9*9*5.65mm,Vox	1	54H00210-00M
8	60H00087-00M	TFT-LCD Module,TX06D10VM0AAA,HITACHI,59.3*42.6*2.25mm	1	
9	71H01810-00M	Cover,Battery,CHEW CHIENG,VOX	1	
10	72H01548-00M	Screw,POINT SCREW,KH-M16-L14-NI,Libra	8	
11	72H01875-00M	Shielding,Camera,JUN-YEN,Vox	1	
12	72H01876-00M	Screw,M1.6,KH,D2.5*3,NI+NYLOK	1	
13	72H01889-00M	EMI Gasket,LCD,CATERON,Vox	1	
14	72H01892-00M	Screw,PHK14*3.8,BLACK	2	
15	72H01893-00M	Screw,FPHM1.4-0.3*3.3(2.45,0.3),AISI-1018,BLACK	4	
16	72H01894-00M	Screw,HAMA NAKA SHOUKIN,PH M1.6,T6,3.2D*4L,Nickel(Silver)	4	

NOTE:

THE PHOTO OF SPL IS GENERIC AND ONLY FOR REFERENCE, THE COLOR AND APPEARANCE MAY BE DIFFERENT FROM THE SHIPPED PARTS, IF YOU WANT TO APPLY THOSE PARTS, PLEASE CONTACT YOUR SERVICE ACCOUNT MANAGER FOR MORE INFORMATION.

AS FOR PICTURE, PLEASE REFER TO THE TABLE AS BELOW.

FOR REFURBISHMENT PARTS, THE TABLE IS FOR YOUR REFERENCE. YOU CAN DO THE REFURBISHMENT ONLY WHEN YOUR SERVICE MODEL IS ALLOWED TO DO THE REFURBISHMENT.

Picture for SPL 80H Kernel and Accessories

(Part no on picture is for Generic version only, please check SPL for detail per customer)

Part No.	XXXXXXXXX-XXX
Description	
Q'ty	
Repair Code	
Refurbishment	Yes/No
Return to HTC	Yes/No

Part No.	XXXXXXXXX-XXX
Description	
Q'ty	
Repair Code	
Refurbishment	Yes/No
Return to HTC	Yes/No

Part No.	XXXXXXXXX-XXX
Description	
Q'ty	
Repair Code	
Refurbishment	Yes/No
Return to HTC	Yes/No

Part No.	XXXXXXXXX-XXX
Description	
Q'ty	
Repair Code	
Refurbishment	Yes/No
Return to HTC	Yes/No

Part No.	XXXXXXXXX-XXX
Description	
Q'ty	
Repair Code	
Refurbishment	Yes/No
Return to HTC	Yes/No

Part No.	XXXXXXXXX-XXX
Description	
Q'ty	
Repair Code	
Refurbishment	Yes/No
Return to HTC	Yes/No

Part No.	XXXXXXXXX-XXX
Description	
Q'ty	
Repair Code	
Refurbishment	Yes/No
Return to HTC	Yes/No

Part No.	XXXXXXXXX-XXX
Description	
Q'ty	
Repair Code	
Refurbishment	Yes/No
Return to HTC	Yes/No

Part No.	XXXXXXXXX-XXX
Description	

Part No.	XXXXXXXXX-XXX
Description	

8.2 Board Level 2.5 Repairs

■ Basic Repair Instructions for Component Replacement:

Step 1 Place the solder-proof tape to cover the surrounding area of the components which being replaced.

Warning：DO NOT overheat the tape and components to avoid the tape melted and the components damaged

Step 2 Use Heater Gun (HAKO850B, set the temperature between 350°C, Air Speed 3~5) to remove the components.

Step 3 Wait till the temperature cool down before removing the solder-proof tape to avoid other components being removed

Step 4 After the damaged or defective components have been replaced; clear the surroundings for solder and flux residues.

Notice:

A. Checking the polarity of CON8, and the position can't be shifted.

B. Checking the polarity of SW8、SW7, and it can't be reversed.

C. All the parts of the PCB should be checked if it is missing or not.

D. The OP must to wear antistatic wrist band .Don't put boards together and avoid hitting them.

E. When you solder and repair that the soldering iron ,temperature must be setup 415℃. (The temperature range is 415℃±5℃),and the solder wire's diameter is 0.4/0.5/0.6mm(SAC 305 (1.1%)

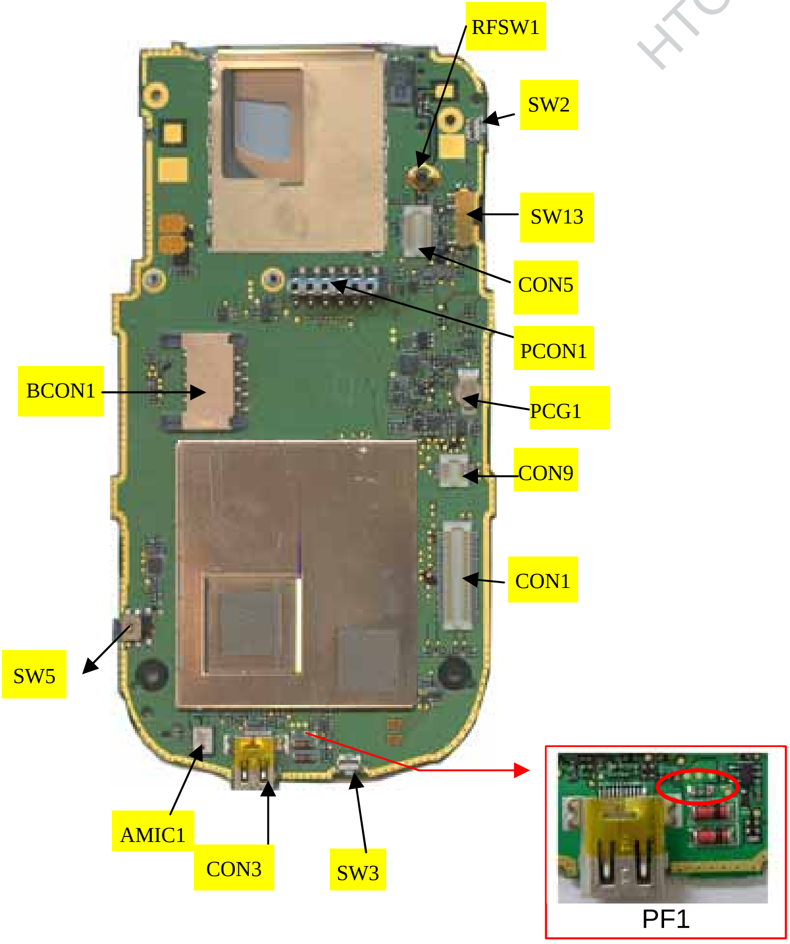
F. Please be noticed to follow below steps for main board repair which is equipped with **Golden Capacitor**:

1. When replacing level 2.5 components located around the golden capacitor:
   I. The temperature of the hot air blower must be under 400°c
   II. When apply the hot air to the part / component, the heating time must be under 20 seconds (including the time of removing and soldering)
   III. The temperature of the soldering iron must be under 350°c
   IV. When apply the solder tip to the part / component, the heating time must be under 5 seconds
   V. The solder tip must not contact with the golden capacitor
2. For BGA replacement: The golden capacitor must be removed before perform pre-heating, heating, soldering and de-soldering process, and then it must be replaced with a new one (please refer to 1.c. and 1.d. steps)
3. For main board which failed to pass the function test, the golden capacitor must be replaced with a new one and must follow below soldering criteria: The temperature of the soldering iron must be under 350°c When apply the solder tip to the part / component, the heating time must be under 5 seconds The solder tip must not have a contact with the body of golden capacitor

➢ 51HXXXXXXXX PCBA-MAIN BOARD(Side A)

Item	P/N	Description	Qty	Location	Substitute
1	75H00248-00M	COAXIAL CONNECTOR,RF,WITH SWITCH,SMD,MM8430-2600RA1,MURATA	1	WCON_SW1	
2	75H00276-00P	Connector RF,5.8*5.4*3.9,Female,MS-147(06),4pin,HRS	1	WECON1	
3	75H00465-01M	Connector I/O,Reverse,11P,0.4mm Pitch,MJE21-11K7P21,ACON	1	CON15	
4	75H00615-00M	Connector Others,90mohm,24P,0.9Pitch,0.5A,60V,CAM-F94M09,MITSUMI	1	CON2	
5	75H00633-00M	Connector,Battery,4Pin,2.5mmPitch,250042MB004G315ZR,SUYIN	1	PCON1	
6	75H00636-00P	Connector B to B,80P,0.4Pitch,24 5801 080 002 829+,KYOCERA,Female,without position boss	1	CON6	
7	36H00230-00M	SWITCH,SOH-213HST,MITSUMI,70/-20degC	5	SW1 SW2 SW3 SW6 SW7	

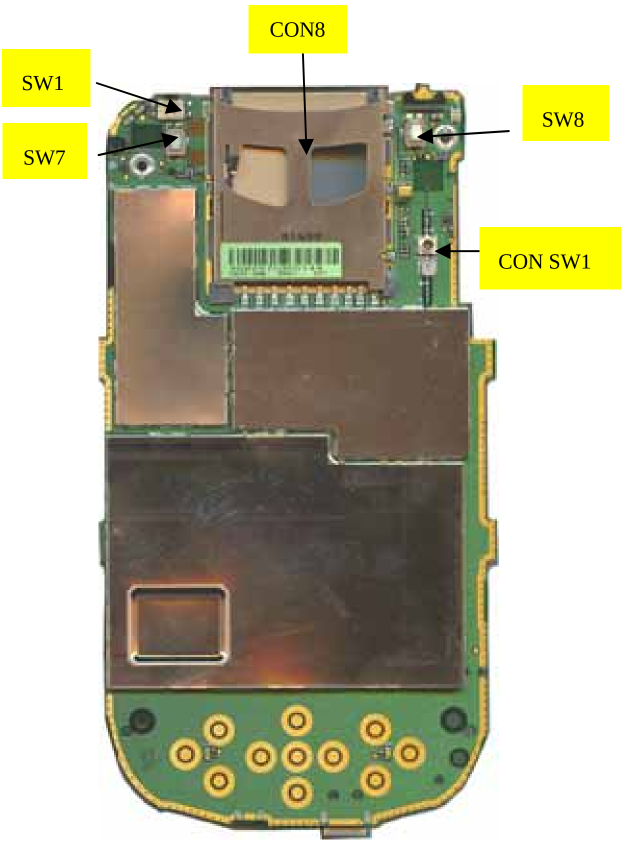
SIDE A PHOTO AND COMPONENT LOCATION



51HXXXXXXXXX PCBA-MAIN BOARD(Side B)

Item	P/N	Description	Qty	Location	Substitute
1	75H00248-00M	COAXIAL CONNECTOR,RF,WITH SWITCH,SMD,MM8430-2600RA1,MURATA	1	WCON_SW1	
2	75H00276-00P	Connector RF,5.8*5.4*3.9,Female,MS-147(06),4pin,HRS	1	WECON1	
3	75H00465-01M	Connector I/O,Reverse,11P,0.4mm Pitch,MJE21-11K7P21,ACON	1	CON15	

SIDE B PHOTO AND COMPONENT LOCATION



8.3 FRU M/B additional parts location

This chapter is about locations and P/N of additional parts (Mylar, Gasket, tape, etc…) for MB.



Number	Description
77H00203-00M	Water Sensitive Label,4*2.5mm,Ming Jye,BlueAngels
72H02282-00M	Copper Foil,THERMAL,D,NIKE

9 RF Antenna Specification

Sapphire WCDMA Antenna Test Specification					
Item	Test Name	TX Level	Uplink / Downlink UA RF CN	1st Downlink cell power	note
1	Camp@ W-CDMA Band (2100)	3	9613 / 10563	-60	
2	BS Originate Cell	3	9613 / 10563	-60	
Receiver Test					
3	Fast Bit Error Rate	3	9613 / 10563	-104	<= 0.1 %
4	Fast Bit Error Rate	3	9750 / 10700	-104	
5	Fast Bit Error Rate	3	9887 / 10837	-104	
Transmitter Test					
6	TX Power	3	9613 / 10563	-60	>= 18 dbm
7	TX Power	3	9750 / 10700	-60	
8	TX Power	3	9887 / 10837	-60	

Sapphire WCDMA Antenna Test Specification					
Item	Test Name	TX Level	Uplink / Downlink UA RF CN	1st Downlink cell power	note
1	Camp@ W-CDMA Band (900)	3	2712 / 2937	-60	
2	BS Originate Cell	3	2712 / 2937	-60	
Receiver Test					
3	Fast Bit Error Rate	3	2712 / 2937	-104	<= 0.1 %
4	Fast Bit Error Rate	3	2788 / 3013	-104	
5	Fast Bit Error Rate	3	2863 / 3088	-104	
Transmitter Test					
6	TX Power	3	2712 / 2937	-60	>= 18 dbm
7	TX Power	3	2788 / 3013	-60	
8	TX Power	3	2863 / 3088	-60	

Sapphire GSM Antenna Test Specification

Item	Test Name	TX Level	TCH	1st Downlink cell power	note
1	Wait_Signal	0	600	-65	
2	Power_Class	0	600	-65	
PCS 1900 Receiver Test					
3	Fast Bit Error Rate	0	512	-104	
4	Fast Bit Error Rate	0	661	-104	<= 2 %
5	Fast Bit Error Rate	0	810	-104	
PCS 1900 Transmitter Test					
6	TX Power	0	512	-65	
7	TX Power	0	661	-65	>= 25 dbm
8	TX Power	0	810	-65	
GSM 850 Receiver Test					
9	Fast Bit Error Rate	5	128	-104	
10	Fast Bit Error Rate	5	189	-104	<= 2 %
11	Fast Bit Error Rate	5	251	-104	
GSM 850 Transmitter Test					
12	TX Power	5	128	-65	
13	TX Power	5	189	-65	>= 26 dbm
14	TX Power	5	251	-65	
EGSM 900 Receiver Test					
9	Fast Bit Error Rate	5	975	-104	
10	Fast Bit Error Rate	5	38	-104	<= 2 %
11	Fast Bit Error Rate	5	124	-104	
EGSM 900 Transmitter Test					
12	TX Power	5	975	-65	
13	TX Power	5	38	-65	>= 28 dbm
14	TX Power	5	124	-65	
DCS 1800 Receiver Test					
21	Fast Bit Error Rate	0	512	-104	
22	Fast Bit Error Rate	0	699	-104	<= 2 %
23	Fast Bit Error Rate	0	885	-104	
DCS 1800 Transmitter Test					
24	TX Power	0	512	-65	
25	TX Power	0	699	-65	>= 27 dbm
26	TX Power	0	885	-65	